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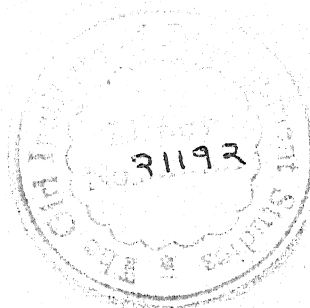
THESIS
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IN
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BY
Sarita Tiwari

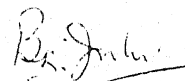Under the Supervision of
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GIRI INSTITUTE OF DEVELOPMENT STUDIES
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Certified that Ms. Sarita Tiwari (now known as Ms. Sarita Hem) has put in more than 200 days of attendance at the Giri Institute of Development Studies, Lucknow, a recognised centre for Ph.D. in Economics of the Kanpur University. Her thesis is being herewith forwarded to the Kanpur University.

B.K. JOSHI
DIRECTOR
Director
The Giri Institute of Development Studies
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April 8, 1992

DECLARATION

This Thesis entitled "Inter-Regional Patterns of Industrialisation in U.P.", embodies my original work for submission to Kanpur University for Ph.D. Degree. Further I declare that this work either in part or in full has not been submitted elsewhere for any degree or diploma or for publication.

Sarita Tiwari
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CERTIFICATE

This is to certify that the enclosed thesis entitled "Inter-Regional Patterns of Industrialisation in U.P.", embodies the work of the candidate, Ms. Sarita Tiwari (now known as Ms. Sarita Hem) herself and that she worked under my supervision to complete her study for the period required under Ordinance 6.

(R.T. TEWARI)

April 8, 1992

PREFACE

The experience of the previous four decades adequately demonstrates that industrialisation has played a critical role in overall development. While acting as an instrument to its restructuring, industrialisation assists in diversifying the pattern of economy by equipping it with latest plant and machinery and utilising modern technologies and techniques of production. This, in turn, leads to fuller exploitation of human and natural resources, increased levels of productivity, employment and income and speedier process of balanced regional development, besides fetching a considerable amount of foreign exchange.

The developed countries with rapidly growing industrialisation have been able to handle their developmental problems more efficiently in a shorter duration than the less developed countries (LDCs) including India, which have lagged far behind the industrialised nations. In the State of Uttar Pradesh, a vigorous programme for industrialisation was launched since dawn of the Seventies with all hopes that there would be a significant change in its inter-sectoral and inter-spatial patterns, besides inprovement in overall performance of industrialisation. But the pace of

industrialisation in the State is still found to be far

from satisfactory.

On the other hand, the studies conducted so far in

these directions primarily concern with the set of

objectives involving analysis of specific problems and

issues. However, none of these studies have attempted

to analyse the patterns of industrialisation that have

undergone changes in U.P. during the period of previous

two decades. To bridge these chasms, the present study,

therefore, aims at analysing the changes in inter-

regional patterns of industrialisation in Uttar Pradesh

during the period of 1970-71 to 1986-87.

The whole dissertation is arranged in seven

chapters. Broadly the work can be classified into three

sections. The first section comprising the first three

chapters is primarily devoted to the theoretical

discussions regarding the concepts, measurement and the

patterns of industrialisation along with the

methodological inputs required for carrying out the

present analysis.

The core of the thesis is provided in the second

section consisting of the subsequent three chapters

focusing on the analysis of inter-sectoral and inter-

spatial patterns of industrialisation in U.P. alongwith

I take this opportunity to record my sincere thanks to Mr. C.D. Bijola and Ms. Rachna Mujoo for their constant inspiration and valuable suggestions. I also wish to thank Dr. Yogesh Mishra, Dr. Ruby Ojha, Pramod, Nomita, Gauri and Geeta for their moral support and help.

I am immensely thankful to Mr. S.K. Ghosh and Ms. Ishrat Hasnain for processing of the data on computer WIPRO PC/XT and also to Mr. N.B. Bhatt for production of manuscript skilfully.

I shall be failing in my duty, if I do not express and extend my heartfelt gratitute to all the members of my family specially my parents and my husband for their forbearance during the period of finalising the dissertation.

Sarita Tiwari
(SARITA TIWARI)

Lucknow, 1992

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CHAPTER I

INTRODUCTION

1.1 Introductory

Industrialisation, as a part of the process of development, does not function in isolation of an economy. Technical, economic and social changes also take place simultaneously.[1] It is the key to restructuring the economy as it involves a number of structural changes. Viewed in a narrow sense, it can be conceived as a change in the performance of industrial sector in terms of the changes in the share of industrial produce to total net domestic product, value of industrial produce per capita or per industrial worker. On the other hand, when we conceive industrialisation in broader sense, besides the aspects already covered in narrow sense it also includes several other changes concerning institutions, organisation and environment. Moreover, the history demonstrates that industrialisation helps in diversifying the pattern of economy by equipping it with latest plant and machinery and utilising modern technologies and techniques of production.[2] This results in better and fuller utilisation of human and natural resources, increased levels of productivity, employment and income and speedier process of development with balanced regional growth.

Balanced regional development has been a cherished goal of almost all the countries of the Third World. But the problem of growing regional disparities during the past has posed a severe threat/challenge to the planners, policy makers and researchers. India being one of the developing countries of the Third World has been experiencing it much more alarmingly. Even today, measuring the level of development through composite index based on the selected indicators, we notice that Punjab occupies its position on the top and Madhya Pradesh qualifies for its place only at the bottom.[3]

Inter-State disparities particularly in the context of industrialisation are not less important in the context of Uttar Pradesh, which is considered as one of the industrially backward States of India. In this respect, we notice that the contribution of industrial sector to total net domestic product in the State at 1980-81 prices during 1986-87 was 19.1 per cent as against the corresponding percentage of 25.9 for the country as a whole.[4] Besides, there is marked regional variation within the State of Uttar Pradesh also. The contributions of the Western and the Central regions to the total industrial income of the State during the year 1986-87 at 1970-71 prices was relatively high with 29.3 per cent and 24.5 per cent respectively, whereas the respective contributions of the Eastern, the Hill and

the Bundelkhand regions were correspondingly 21.7, 9.6
and 15.9 per cent only.[5]

The State of Uttar Pradesh is basically an agrarian
State. Although the Western and the Central regions
have comparatively better industrial base, agriculture
is predominant in all the regions and majority of the
workforce is engaged in this sector only. During close
of the sixties, it was realised that agriculture could
no longer absorb additional labour force with reasonable
remunerations. Hence, it was felt that industrial
sector should be encouraged so that both economic
wastage and regional variations are reduced to a minimum
and the problem of backwardness is solved to a
considerable extent.

There was a shift in strategy from 'top down' to
'bottom up' approach. Quite a large number of
programmes based on 'area development' and 'target
group' approaches were started. In industrial sector,
special incentives were provided for accelerating the
pace and the process of industrialisation in identified
industrially backward areas, besides the provision of
concessional finance and establishment of 'District
Industries Centres' (DICs). These measures are
indicative of the fact that vigorous programme for
industrialisation of backward areas was launched in the
State during the Seventies. It was visualised that as a
result of these measures, there will be not only an

improvement in overall pattern of industrialisation but also a significant change in its inter-regional pattern concerning both the sectoral as well as spatial aspects.

1.2 Review of Literature and Need of the Study

Quite a large number of studies have, already been carried out on the subject of regional variation and industrial pattern in India during the post-independence period. 'India - Planning for Industrialisation' by Jagdish, N. Bhagwati and Desai[6] exposes India's experience with industrialisation since independence. They have not only reviewed the historical trends and growth of industries but have also examined a wide ranging economic issues influencing the overall industrial development. But they have not touched upon the other important issues of Indian industries such as the state-wise industrial growth, the emerging regional industrial structure and the spatial diversification of industries. 'Regional Aspects of Indian Industrialisation' by Y.K. Alagh[7] atempts to identify 'blocks' or 'clusters' of inter-related industries at the regional level of India, making use of disaggregated data for 1965. M.M. Mehta[8] analyses the main trends in the size, location and integration of industrial units in seven selected Indian industries for the period 1905-59. But the coverage of these studies is limited both in terms of the number of industries and the issues examined.

'Industrial Dispersal Policies' by M.D. Godbole[9] and Spatial Diversification of Industries – A Study in U.P. by T.S. Papola,[10] concern mainly with specific issues relating to the subjects under study. While Godbole's study concentrates mainly on the industrial dispersal policies in Maharashtra with major focus on the role of the financial institutions and development agencies, the study by Papola successfully examines the extent to which the current policy instruments have succeeded in influencing industrial location in backward areas. 'Location of Industries in India' by T.R. Sharma[11] is a work on the location planning and redistribution of industries in India with special reference to the six selected industries. While 'Industrialisation in India-Spatial Perspective' by V.K. Seth[12] studies the clustering in order to focus on an examination of the spatial spread of modern industry to India and within India.

While summing up, we observe that the above studies have, no doubt, dealt with the set of objectives involving analysis of specific problems and issues. However, none of these studies have attempted to analyse the pattern of industrialisation that have undergone changes over the period resulting from efficacy of various kinds of development forces including enforcement of the revised strategy in the State like Uttar Pradesh.

1.3 Objectives

Therefore, the present study aims at analysing the changes in the inter-regional patterns of industrialisation in Uttar Pradesh during the period of 1970-71 to 1986-87. Separate analyses have also been carried out for the two sub-periods i.e., 1970-71 to 1980-81 and 1980-81 to 1986-87. Within the framework of the aforesaid broad objective, the specific objectives set out for analysis in the proposed study consist of the following :

  (i) To study and analyse the changes in the sectoral pattern of industrialisation in the State in terms of its relative contribution to net domestic product, large and small scale industries, consumer goods and capital goods industries, resource-based industries and also for all the nineteen industry groups based on the two-digit classification.

 (ii) To study and analyse the changes in regional or spatial pattern of industrialisation for whole of the industrial sector, all the nineteen industry groups based on two-digit classification, and also for consumer goods and capital goods industries separately for different regions/districts of the State.

(iii) To assess the relative industrial backwardness of the State as well as districts and analyse contributions of the associated variables (including social capability) to the level of industrialisation.

(iv) To suggest measures for achieving the speedier process of industrialisation in different regions/districts of the State.

1.4 Hypotheses

Attempts have also been made to test the following hypotheses during the course of study.

(i) A critical minimum level of agricultural development is invariably needed for the speedier process of industrialisation;

(ii) There is a positive relationship between the degree of concentration of industrial activities and level of industrialisation;

(iii) There is a direct relationship between level of industrialisation and level of regional development; and

(iv) There is an inverse relationship between relative industrial backwardness and the level of social or human capability.

1.5 Methodology

A detailed discussion on the methodology is already accomodated at appropriate places in various chapters of the dissertation. However, a brief of it is recorded here as follows :

Generally, the term industrialisation is represented by the share of industrial sector in the total income of an economy and by the value of industrial produce per capita or per industrial worker. But this way of defining the term is deemed to be narrow because it takes into account only performance aspect of industrialisation and the other aspects like technology and input use are disregarded inspite of being equally important. Therefore, with a view to analysing its inter-sectoral and inter-spatial dimensions, the term 'industrialisation' in the present study is both conceived and measured in terms of certain selected indicators covering various aspects of industrialisation.

The analysis of sectoral pattern which deals with macro processes of industrialisation is confining to mainly the State level. The analysis of the growth and structure of the total industrial sector in terms of number of units, employment, value added and capital employed is carried out at three points of time (i.e., 1971, 1981 and 1987) with the help of percentages, growth rates, ratios etc. Besides, a similar analysis

has also been carried out for different classification of industries especially consumer goods and capital goods industries, large and small scale industries, resource-based industries besides all the nineteen major industry groups based on two-digit classification.

On the other hand, the spatial pattern of industrialisation is analysed for different regions and districts of the State. Classification of districts into different categories based on levels of lindustrialisation has been done using two different approaches, i.e., Composite Index and Normative.

To construct the Composite Index of Industrialisation, we have selected, in all, the following six indicators which primarily concern with performance, concentration, technology and inputs use in the industrial sector:

(i) number of factories per 100 sq.km. of area;

(ii) number of factories per lakh of population;

(iii) gross value of industrial produce per lakh of population;

(iv) industrial workers engaged per 100 sq.km. of area;

(v) value added by manufacture per industrial worker; and

(vi) fixed capital employed per industrial worker.

In addition, coefficient of specialisation and location quotient have also been applied to study and analyse the extent of diversification of industrial activities at the district level. Besides, assessing and analysing the industrial base for individual district of the State has also been attempted.

Once we have assessed the level of industrialisation of different districts in the State, we have also tried to assess and analyse the contribution of per capita income (real GDP), economic infrastructure and social or human capability to level of industrialisation through application of multiple regression model.

1.6 Sources of Data

The study relies mainly on the data compiled from secondary sources. The main sources of data were the Annual Survey of Industries of U.P. (1971, 1980-81 and 1986-87), various issues of the State Income Estimates and estimates of District Domestic Net Output brought out by Economics and Statistics Division of the State Planning Institute, U.P.

Besides, relevant data were also procured from World Development Report, 1988 published for the World Bank by Oxford University Press, New York; various issues of the District-wise indicators of Development published by the Area Planning Division of the State

Planning Institute, U.P. and Child Mortality Estimates
of India, Demography Division, Office of Registrar
General, India, Ministry of Home Affairs, New Delhi.
Some data were also collected from the official
documents of the Directorate of Industries, Kanpur. In
addition, the other sources include various Plan
documents of Government of India and U.P. and other
relevant reports brought out by Economics and Statistics
Division of the State Planning Institute, U.P.

1.7 Organisation of the Study

The present study is arranged in seven chapters.
To begin with, the role of industrialisation in overall
development, need of the study, objectives, hypotheses,
methodology employed are briefly indicated in the
introductory chapter. In the second chapter, we have
tried to describe the concept of industrialisation
within the theoretical frame, so as to operationalise
the term 'industrialisation'. Besides, various
determinants and measures of industrialisation have also
been discussed to facilitate a rather difficult task
concerning measurement of industrialisation. The third
chapter is devoted to a theoretical configuration
regarding different patterns of industrialisation.
Attempt has also been made to look into the possibility
of generalising the pattern of industrialisation.

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The   chapters Fourth to Sixth constitute core of
the present study. In the fourth chapter, an attempt
has been made to analyse the sectoral pattern of
industrialisation in terms of growth and structure of
organised industrial sector. Whereas, in the fifth
chapter, with the help of composite index   and
normative approaches, coefficient of specialisation
and location quotient, attempts have been made to
study the differentials in the spatial pattern of
industrialisation, considering district as unit of
analysis.   Besides, efforts have also been   made
through chapter sixth to study and analyse   the
contributions of per capita income (real   GDP),
economic infrastructure and social capability to the
level of industrialisation separately for   three
different   categories   (based   on   level   of
industrialisation) and also for whole of the State.
The   final   chapter endeavours to derive   certain
significant conclusions and suggest measures for the
speedier process of industrialisation to achieve the
goal of balanced regional development.

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9. M.D. Godbole, <u>Industrial Dispersal Policies</u>, Himalaya Publications, Bombay, 1978.

10. T.S. Papola, <u>Spatial Diversification of Industries - A Study in U.P.</u>, Allied Publications, New Delhi, 1981.

11. T.R. Sharma, <u>Location of Industries in India</u>, Hind Kitab Ltd., 1954.

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CHAPTER II

INDUSTRIALISATION : CONCEPTS, DETERMINANTS AND MEASUREMENT

2.1. (i) Introduction

The prime objective of this chapter is to find out the clear-cut concept of industrialisation which could help in identification of determinants to be used for assessing the level of industrialisation in the present context. Since concept and determinants are closely inter-woven and have profound influence on the measurement of industrialisation, these three inter-related issues are discussed here in the subsequent sections of this chapter.

2.1.(ii) Brief History of Industrialisation

The history of mankind has witnessed three great transformations; emergence of human groups; appearance of civilisation and cyrstallisation of modern industrial society and its spread over the planet. Industrialisation with its tremendous material power and dynamism has transformed all societies and inaugurated the era of universal history.[1]

"About two hundred years ago, unbeknown to those living at that time, a fundamental revolution began in the history of mankind which was to lead to development

of the World as we know it today. First in Britain,
then in few areas of Europe and North America, a
structural transformation seen in the perspective as
having been in preparation for centuries, shifted the
balance of productive activity from agriculture to indu-
stry and opened up boundless possibilities for
increasing the productivity of human labour. This
process best described as industrialisation brought into
existence those forms of labour and styles of living
distinguishing the modern world from the past and
advanced countries from the 'backward' ones".[2]

Though there were many machines in use prior to
industrial revolution, such as ploughs, air-pumps,
printing machines and spinning wheels, yet the nature,
scope and operational methods of various economic
activity particularly production function under went
considerable change during the revolution. Huge and
power driven machines working under human supervision
opened ample opportunities of mass emplyment as well as
large scale production accompanied by the mobilisation
of the mass of population to various cities making the
commencement of machine age, a characteristic of
industrialisation.

In industrialisation, workers are incorporated into
an articulated system of division of labour performing
only one small portion of production, whereas the
instruments of production are concentrated in the hands

of a small class of industrial capitalists who invest a
heavy outlay of capital upon which it becomes necessary
to obtain a profitable return. This new class division
initiated by industrialisation sums up the social
relation, which is the source of conflict and problems
of the kind, that still dominate and torment the modern
society.[3]

2.1.(iii) Objectives of Industrialisation

The past experiences of developed nations show that
industrialisation plays a critical role in the process
of economic development of any economy. That is why for
the great majority of less developed countries (LDCs),
industrialisation remains the fundamental objective of
economic development. In this context, in a study of
UNIDO, "industrialisation is considered to achieve high
rates of economic growth, to provide for the basic needs
of population, to create more employment opportunities,
to lead to an increasing diversified economy and to give
rise to desirable social, psychological and institu-
tional changes".[4]

Besides, various other reasons cited for
industrialisation are to raise the standard of living by
increasing per capita net national income, to improve
balance of payment situation and to satisfy the desire
for economic independence expressed in the attainment of
self-sufficiency and the desire for national prestige.[5]

2.2. Concepts of Industrialisation

The historical background as sketched in the previous paragraphs brings out the significance of industrialisation. That is why ever since its inception social scientists have given much attention to this dynamic phenomenon. With the result, a bulk of literature on the subject is available. Unfortunately, instead of making issues clearer this stock of information has increased the mist of ambiguity surrounding the concept of 'industrialisation'. Different scholars have interpreted it differently to suit their purposes and meet their requirements. For instance, in its broadest connotation, industrialisation has become synonymous with the term economic development.[6] Actually, the modern economic development is so dependent on industrial development that the difference between the two is hardly bothered. Truly speaking, all such definitions intend to capture the social, economic and political impact of industrialisation, which, in any case, is not less significant. For example, it is defined as "a process which accelerates economic growth; affects structural changes in the economy, particularly in respect of resource utilisation, production functions, income generations, occupational pattern, population distribution and foreign trade and induces social change".[7] The difference between economic development and industrialisation

vanishes only when latter becomes so mature that the
entire economy takes to industrial methods of
production. Then, even agriculture becomes an industry —
a phase signifying completion of industrial revolution
as envisaged by the Marxists.[8]

Therefore, though there does not seem much
difference between the two, yet both the terms are not
to be conceived identical particularly in the context of
LDCs. While economic development is a generic term,
which embraces all forms of economic activity that serve
to furtherance of development of a given political and
spatial unit, industrial development is more specific in
its connotation and use.[9] The researchers have,
therefore, developed specific definitions of
industrialisation so that contribution of
industrialisation to overall economic development can be
measured in a convincing manner. These definitions
being specific in nature are normally narrow in scope
but because of their operational characteristics they
are deemed to be carrying greater usefulness. However,
within this category of definitions, we find
multiplicity in proxy of the term industrialisation for
its comprehension.

In the Marxist literature when industrialisation is
used in narrow sense, it is applied to establishment and

development of the industries producing the means of instruments of production.[10]

Generally, industrialisation refers to the growth of industry, i.e., mining, manufacturing, construction and infrastructure industries (transportation, communication and public utilities) and the increase in its share in total economy.[11]

Sometimes, industrialisation is represented by the rising share of "manufacturing" in Gross Domestic Product (GDP). Manufacturing being the leading sub-sector of industrial sector is less ambiguous term including all goods (no services) that require transformation from the primary material or semi-finished products.[12]

In many studies, on the basis of 'Clark-fisher Theory'[13] any movement away from primary activity is termed as industrialisation.[14]

However, all these definitions suffer from certain inherent inadequacies. For example, as the process of development progresses, the rising share of industrial sector in GDP becomes constant at its maturity and then starts declining as tertiary/service sector starts gaining importance.[15] Viewing this phenomenon in the light of the aforesaid definition, such a phase would represent de-industrialisation and the basic purpose of

defining the concept would be jeopardised to a large extent.

Besides, these definitions tend to be biased to the economic aspect of industrialisation. The importance of socio-political and ecological aspects is undermined. Therefore, we do not find these concepts of industrialisation much meaningful in the present context.

Probably because of the inherent inadequacies in its conceptualisation, Sutcliffe while in search of suitable alternative laid down three criteria for a country to be considered industrialised. First being that, atleast 25 per cent of the total income arises in the industrial sector; secondly, atleast 60 per cent of this 25 per cent arises in the manufacturing sector and thirdly, atleast 10 per cent of the total population is employed in industrial sector.[16] This workable definition as developed by Sutcliffe seems to be the most operative in nature but its extensive use would largely depend upon the availability of the required data. In case of LDCs, the data problem is acute and therefore its use might be restricted unless these criteria are slightly modified.

M.Owen Lynch defines industry as 'that trait which makes up the characteristic mode of production based upon machine and fuel power. Industrialism would then

become a process involved in creating and maintaining industry or the adoption of this mode of production. Industrialisation would then be development and extension of these industrial factors or traits. These definitions are, no doubt, theoretically sound and sophisticated but their operational merit is limited.

Faced with such problems, we have tried to conceptualise our own concept of industrialisation. Considering it as a part of the process of development, we indeed acknowledge that it cannot be studied in isolation. However, to upgrade the objectivity of the concept, so that it can stand the test of empirical analysis, industrialisation is conceived in terms of contribution of industrial sector to total net domestic product, value of industrial produce per capita or per industrial worker. But this way of defining the term takes into account only performance aspect of industrial sector and other aspects like environment, which are equally important, are disregarded. Therefore, with a view to analysing the inter-regional pattern of industrialisation, the term in the present context has been conceived in terms of certain selected indicators concerning mainly, performance, concentration, input use and technology that are closely associated with the progress, pace and pattern of industrialisation.

2.3.(i) Determinants of Industrialisation

In this section, determinants of industrialisation are considered as those factors which are generally required for carrying out industrial activities over a space.   They have to be arranged for in advance simply because they are necessary pre-requisites and industrialisation is unlikely to occur in otherwise situations.

As already pointed out in the previous section, a number of factors are involved in shaping the process of industrialisation.   So much so that practically it is not possible to cover all of them. Some of them are even beyond the reach of any measuring rod. Hence, the choice of determinants in the present context has been made keeping in view their relevance and availability of data.   In other words, only those factors are made part of our analysis, which are deemed necessary for undertaking an industrial enterprise. As we are already aware, entrepreneurs are guided by profit motive and by undertaking any industrial enterprise they want to maximise their profit. Profit can be maximised only when maximum possible output is achieved at a minimum possible cost. Therefore, it becomes necessary at the entrepreneur level to make choice of the production function including technology which could fetch maximum possible output with the use of minimum possible inputs.

2.3.(ii) To begin with, efforts have been made to exhibit determinants of industrialisation through the following chart:

CHART 2.1

Determinants of Industrialisation

Resources   Environment/   Markets
                   Industrial Climate

1. Natural*   1. Infrastructure***   1. Internal

2. Labour**   2. Institutions****   2. External

3. Capital   3. Agriculture

                   4. Urbanisation

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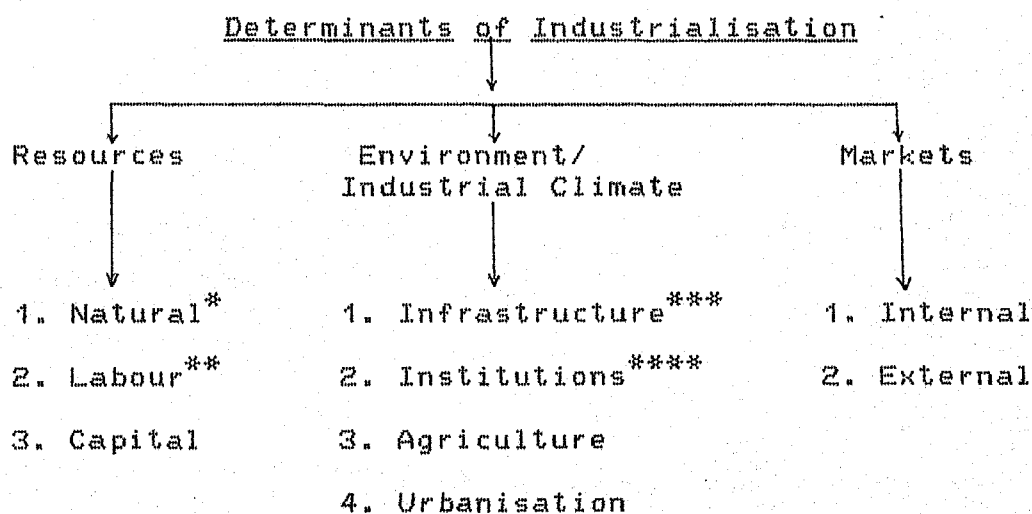
*   : Consists of agriculture, livestock, minerals, marine, water energy and forest resources.

**   : Comprises skilled, semi-skilled, unskilled labour.

*** : Includes road, transport, water and power.

**** : Consists of financial, technical, training and marketing institutions.

2.3.(iii) As shown in the Chart 2.1, one of the most important determinant of industrialisation is resources. Resources make up the potential of the economy and are primarily gift of nature. Therefore, any space in question will be either richly or poorly endowed with

such resources. Planning for industrialisation under
these two extreme situations will also require different
approaches to be followed. It is going to be smooth and
easier in resource rich case as compared to resource
poor. Further, in case of paucity of resources, two
situations can arise, i.e., either the place be
partially or fully deprived of resources. The
probability of complete deprivation is remote. In case
of partial deprivation, resources in question can either
be arranged from outside or with the help of technology
the resources that are scarce can be substituted by
those in abundance, subject to elasticity of substitu-
tion.

Resources needed for industrialisation can be
further specified as (i) Natural, (ii) Human, and (iii)
Capital.

2.3.(iii)(a) **Natural Resources** are primarily given by
geographical, climatic and even locational factors.
They have their bases in agriculture, livestock,
mineral, marine, water, energy and forest resources.
These actually serve as a foundation stone for the
establishment and expansion of industries.

2.3. (iii)(b) **Human Resources** on the other hand are
needed to make use of natural resources in the best

possible manner. Moreover, different processes of production in different types of industries use different types of labour belonging to skilled, semi-skilled and unskilled categories. Human resources have a significant bearing on industrialisation because manufacturing being the chief industrial activity is nothing but transformation of materials from their natural form into finished or semi-finished form. The role of labour in the process of transformation is most crucial. Besides, labour must be seen as the chief claimant for whom the fruits of economic development via industrialisation are intended to be realised.

2.3.(iii)(c) **Capital** as defined in the dictionary "..refers to a factor of production produced by the economic system. Capital goods are produced goods which are used as factor inputs for further production... the word is also used as a term for financial assets."[17] This is needed by all productive activities covered under industrialisation either for investment in physical resources such as land, building, machinery equipment, etc, or for making purchases of raw materials, fuels, etc. Capital can be further divided into fixed and working capital. While the former refers to the amount of money invested to acquire fixed assets, which are to be used for fairly long period, the latter refers to the funds required to maintain day to day activities.[18]

2.3. (iv) __Environment__ : Availability of resources alone
is not going to effect industrialisation unless there is
a healthy industrial climate to attract entrepreneurs
for undertaking industrial activity. There is
likelihood of under-utilisation of the resources
including installed capacity in the absence of proper
environment. It is rightly said that resources are
necessary but not a sufficient condition for
industrialisation and hence, environment as a determi-
nant becomes crucial.

Environment is influenced by economic and non-
economic factors including atmosphere. Each one of
these has a definite role to play but the former's
supremacy over the latter in the context of
industrialisation cannot be undermined. As shown in the
Chart 2.1, the core of the factors constituting
environment consists of infrastructure, institutions,
agriculture and urbanisation.

2.3.(iv)(a) __Infrastructure__ can be described as
promotional measures needed for the superstructure of
industrialisation. These consist of mainly road
transport, water and power.

2.3.(iv)(b) __Institutions__, which are but a part of
infrastructure, upgrade the environment by developing a
financial system wherein funds flow swiftly and easily.
It also represents technical and training institutions,

which greatly assist in developing technical and managerial skill of the human resource.

2.3. (iv)(c) **Agriculture** the experience of LDCs in the context of achieving the objective of reducing poverty and unemployment through ambitious programme of industrialisation disregarding simultaneous development of agriculture does not seem to have proved to be yielding the desired results. It follows that agricultural development must proceed, and continue with industrial development to make the latter more successful. Agriculture contributes greatly to the overall environment by not only feeding the factories by providing raw materials but also the men who work there by providing basic wage goods. Moreover, agricultural sector also provides markets for the industrial products. Modern agricultural sector uses most of the inputs produced by the manufacturing sector such as fertilisers, pesticides and agricultural implements.

Besides, industrial sector also provides basic consumption goods to the population depending upon agriculture for their livelihood. In short, the relationship between industry and agriculture is that of mutual inter-dependence which once again proves how agriculture makes the environment more conducive thus promoting the process of industrialisation.

2.3. (iv)(d) **Urbanisation** means the proportion of urban
population to total population. A rise in this
proportion is an indicator of the transformation of
society from agrarian into a non-agrarian one. This
kind of change leads to an improvement in environment
which goes in favour of expansion of industrial
activities. England the first country to industrialise
started the nineteenth century with 30 per cent of
people living in cities and ended the century with over
70 per cent share of urban population in the total
population of the country. Of course, this made a
significant contribution to industrialisation of U.K.

Actually several external economies benefit
manufacturing firms in urban setting such as
availability of skilled labour and access to various
infrastructural facilities including industrial sites,
electricity, water, sewage, roads, railways and in many
cases ports as well.

Each firm also benefits from the economies of
agglomeration which emerges due to the presence of many
firms with a wide range of necessary inputs and
services.

With the swelling of population in these urban
cities, the size of market expands as well. This
results in the creation of more attraction, which is all

the more stronger in most of the LDCs, where transport
and communication facilities are not very developed.[19]

Thus, we notice that a peculiar type of
relationship exists between urbanisation and
industrialisation. It is very difficult to establish
causal relationship between the two. It is rather a
chain of reactions between them. However, there are
studies which have emphatically asserted that
urbanisation plays a pivotal role during the process of
industrialisation over space.

2.3.(v) **Market** : It is a well known fact that
production cycle remains incomplete unless the product
reaches the ultimate consumer. That is how markets have
come to play a significant role in industrialisation of
a country. Economists have often pointed out that low
level of development in majority of LDCs has been due to
smallness of the market. Infact, in the absence of a
proper marketing system, there is no incentive to
entrepreneurs to expand the scale of production to enjoy
economies of scale. More so, markets are necessary not
only for disposal of finished product but also for
acquiring services of various factors of production.
Therefore, a highly developed marketing system both
externally and internally is invariably needed for the
success of industrialisation.

This brief account of the determinants of industrialisation once again clears beyond doubt that a number of factors are involved in the process of industrialisation. In fact, one of the reasons of having a gamut of concepts regarding industrialisation was the multiplicity of factors that determine the pace and pattern of industrialisation. What makes things even more complicated is that industrialisation is influencing to and at the same time is being influenced by the development and its constituents. So much so, that many a time it becomes difficult to establish the causal relationship between development and industrialisation, rather they seem to be synonymous.

2.4. Measurement of Industrialisation

From the arguments provided in the previous sections of this chapter, one can very clearly conclude that industrialisation is the result of cumulative factors/forces that come from various and varied fields. Moreover, industrialisation also contributes greatly to the process of economic development. Social scientists have been keenly interested in developing different methods to measure contribution. On the other hand, policy makers have been interested in its measurement simply because this could help them in fixing the priorities and tangible objectives. The task of measurement is beset with many problems chiefly because

of multiplicity of factors involved in the process of
industrialisation. Nevertheless, a number of measures
are available in literature to scale the level of
industrialisation.

A measure, which is very popular with many social
scientists, is to take the contribution of secondary
sector to total income in terms of GDP/SDP as the case
may be to measure the level of industrialisation. While
enjoying merit of simplicity, this measure suffers from
obvious shortcomings. In considering the contribution
of sector to the economic growth of the economy, as
pointed out by Kuznets, even when we deduct the
contribution made by some other sectors, the magnitude
of the net product so measured would still depend upon
the rest of the economy. "Its product may perhaps be
more correctly described as the result of the activities
of the economy whose particular focus is the given
sector rather than as a contribution of the given sector
fully creditable to it as if it were outside the economy
and offering something to the latter."[20] In short, it
is very difficult to isolate the exact contribution of
any sector fully creditable to it.

Another very important output oriented measure of
industrialisation is in terms of a rising share of value
added in manufacturing. The specific choice of
manufacturing to represent industrial sector is because

(as pointed out in previous sections) it is less ambiguous term. However, even this measure fails to demonstrate a true picture of industrialisation. As the process of development proceeds, the share of manufacturing first rises then becomes constant and thereafter starts declining. Actually, the rising significance of tertiary sector depresses the performance of the secondary sector. Therefore, sole dependence on this measure is not recommended. In view of this, no doubt we would make full use of it but the result, thus, arrived at, will not be taken as such and will be supplemented by the results based on some other measures also.

The index of industrial production as an indicator of industrial growth is another widely used measure to assess the level of industrialisation.[21] However, the problem regarding this measure is that industrial output is influenced by a number of factors such as size of unit, input patterns, levels of mechanisation, conditions of plants, supply of raw materials, power and labour participation and various other social and political factors. In addition, as pointed out by Isher Judge Ahluwalia this measure suffers from unreliable data and non-representative coverage which restrict the accuracy of it.[22]

Various other common measures are in practice to measure the level of industrialisation such as number of

factories and some input oriented criteria e.g., employment in the industrial sector and productive capital employed. A study based on number of factories would demonstrate only the degree of concentration of industrial activity, which is but one aspect of industrialisation. Besides, it may provide wrong impression as no distinction is made on the basis of the size, which is of great importance in industrial economics.[23]

Industrialisation has also been described by many scholars as diversification of employment.[24] In fact, generation of employment is supposed to be the essence of this process and it is due to this merit that most LDCs desire to accelerate the process of industrialisation in their respective countries. Under such conditions, the study of employment becomes highly essential. Therefore, in many studies, level of industrialisation is measured by the proportion of workers engaged in industrial sector in relation to area, population or the total labour force. However, employment alone is unable to measure industrialisation because results of some previous studies have revealed that though industrial activity and factory employment are closely related, they may not move together.[25]

In fact, it would be extremely difficult to measure and evaluate levels of industrialisation on the basis of

any single factor. Therefore, some alternative methods have been developed that incorporate certain key factors influencing/covering various aspects of industrialisation.

Some scholars have represented industrialisation by composite index based on the total vector of some selected indicators related to socio-economic aspect of industrialisation.[26]   In the present context, we would be making use of this measure. And for this purpose, the indicators chosen would be relating to performance, concentration, technology and input-use.

Besides, some scholars have also made use of regional mean deviation as a method to assess and analyse the level of industrialisation.[27]   Sutcliffe has used normative approach to measure the level of industrialisation in absolute terms. For this purpose, he laid down three criteria. First, atleast 25 per cent of the total income in question should originate in industrial sector; secondly, atleast 60 per cent of this 25 per cent should be contributed by manufacturing sector and thirdly, atleast 10 per cent of the total population should be employed in industrial sector.[28] Owing to non-availability of data in most of the LDCs, it is very difficult to apply these criteria as such for measuring the level of industrialisation.   This shows that necessary modifications in the criteria would be essential.   Attempt in this direction has already been

made.[29]   In view of this, it is decided here to modify

these criteria first and then use it for measuring the

level of industrialisation.

2.5. Conclusion

While summing up, we can definitely put down that

industrialisation is a highly complex and important

phenomenon.   Therefore, its measurement is beset with

many difficulties. Atleast a clear understanding of the

concepts and determinants is essential before one can

take up the ambitious task of assessing levels of

industrialisation over space and time.

The review of literature and conceptualisation of

industrialisation carried out earlier in the work have

enabled us to acquire adequate knowledge and comprehend

the term itself. This clarity regarding the concept has

helped us in making choice of the important factors that

determine the progress, pace and pattern of industriali-

sation. This task acquires special significance due to

the multiplicity of factors that are involved in the

process of industrialisation. Indeed, the understanding

of both the concept and the determinants would

facilitate us in evaluating various measures/methods,

which can be made use of in assessing and analysing the

inter-regional patterns of industrialisation at

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     progress follows a set pattern. As a country
     develops economically the ratio of primary
     industries in the economy declines steadily; the
     secondary industries first grows, reaches a plateau
     and then declines, while the ratio of tertiary
     picks up and grows steadily thereafter.

While defining, Clark describes primary activities as those including agriculture, livestock, farming of all kinds, hunting and trapping, fisheries and forestry. Secondary is defined to cover manufacturing, production, building and public work construction. Mining is included on the basis that it bears greater resemblance to manufacturing. Tertiary activities includes commerce, transport, public administration, domestic (paid works) personal and professional service. For further details see C. Clark, Conditions of Economic Progress, First Edition, Macmillan Co. Ltd., London, 1951, pp.337-338.

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CHAPTER III

PATTERNS OF INDUSTRIALISATION : A THEORETICAL CONFIGURATION

3.1 <u>Introduction</u>

Indeed, a significant contribution of Industrialisation, as experienced in the history of economic development of almost all the advanced countries of the present civilisation, has often attracted an utmost attention of the scholars for incessant researches in this field. One of the most striking aspects relates to the pace and pattern of industrialisation. Social scientists particularly geographers and economists seem to have shown much enthusiasm in analysing this aspect especially after the Second World War when industrialisation was deemed to demonstrate a pivotal role in remodelling the war shattered economies. Obviously, due to discipline bias, the geographers concentrated more on analysing spatial pattern of industrialisation, whereas for economists the major thrust of analysis was confining to mainly sectoral pattern of industrialisation.

The present chapter aims at investigating into the theoretical possibilities of generalising the patterns of industrialisation. It is, therefore, considered worthwhile here to examine and analyse the two important questions. First, is there any single uniform pattern

of industrialisation? and second, in case of negation, what are the factors responsible for it?

The analysis pertaining to the above questions would be relevant in the present context because analysis of this kind of general pattern of industrialisation will provide atleast some directions enabling us to predict the likely changes that can be experienced at different stages of industrialisation. Moreover, in case of divergence from the general pattern, it would be possible to explore the causes as well as consequences associated with it. It is believed that the policy makers will be largely benefitted from the findings based on the present analysis. Besides, this will also enhance their knowledge regarding the types of industrial unit or activity which can be established at different stages of industrialisation.[1]

In addition, it will facilitate in finding out proper solution to the decision making regarding the strategy, which would help in accelerating the process of industrialisation in developing economies like Uttar Pradesh.

3.2 Patterns of Industrialisation : An Overview

As transpires from previous literature, economists have investigated the possibilities of a 'normal', 'uniform', regular pattern of industrialisation, using

the aspects as follows : (i) distribution of labour
force between sectors; (ii) distribution of output
between major sectors; (iii) distribution of output
between capital goods and consumer goods; and (iv)
organisation of industrial production.[2]   This is
reflected in the early quantitative works of Simon
Kuznets, pioneer study by Walter Hoffman, earlier work
of R.B. Sutcliffe down to more recent studies of UN
(1963), UNIDO (1979), Batchelor et.al. (1980), Ballance
et.al. (1982), Ballance and Sinclair (1983) including
exhaustive work put in by Chenery and his associates.

The questions related to the existence of the
uniform patterns still remain to be answered. Actually,
different scholars have treated the issue differently.
While some believe that similarities in the pattern of
industrialisation of various countries are discernible,
others argue that in the face of data limitation,
definitional and conceptual problems, it is very
difficult to carve out any systematic relationship
concerning industrial development over different spaces
and at different times.[3]

To cite an example, in one of the pioneer study by
Walter Hoffman, which concerns division of industrial
output between consumer and capital goods, an important
conclusion derived is that industrial development
exhibits the same pattern in all countries whether it
took place in 1770-1820, 1821-60, 1861-90 or from 1891

onwards. To use his own words ".....whatever the relative amounts of the factor of production, whatever the locational factor, whatever the state of technology, the structure of manufacturing sector of the economy has always followed uniform pattern.......consumer goods industries always develop first during the process of industrialisation.....the capital goods industries soon develop faster than the first group. This can be seen throughout the process of industrialisation. Consequently, the ratio of the net output (value added) in the consumer goods industries continually declines as compared with the net output of the capital goods industries."[4] Contrary to this, the studies carried out by Hollis Chenery and UNIDO suggest that typical pattern of industrialisation is neither feasible nor desirable.

Hollis Chenery and his associates have put in an exhaustive work on this issue. They feel that a uniform pattern of industrialisation can only be visualised if the countries under consideration can be classified into homogeneous groups against the backdrop of 'universal factors' such as common technical knowledge, similar human wants, access to same markets for imports and exports, accumulation of capital and skill as the level of income increases. Under such special conditions, industrial development follows a sequence wherein 'Early' industries such as food, leather goods and textiles lead to 'Middle' industries such as non-

metallic, minerals, rubber products, wood products, chemicals and petroleum refining leading to 'Late' industries comprising clothing, printing, basic metals, paper and metal products as well as consumer durables.[5]

The UNIDO study, on similar lines chalks out a hypothesised 'S-shaped' growth path of manufacturing sector's share in Gross Domestic Product (GDP) for homogeneous groups and concludes ".......the typical growth path of each country group shows a wide range of industrial structure at lower levels of per capita income. As the pace of structural change accelerates, the difference between the groups are reduced (with the possible exception of countries having a primary orientation). At higher per capita incomes, the average share of manufacturing in commodity GDP approaches similar levels, although via different development paths."[6]

Regarding the relevance of a search for general laws of growth of industries, Sutcliffe observes that normal pattern often assumes a normative value that it does not deserve. Such patterns according to him are neither necessarily desirable nor even possible for all LDCs and deviation from them should not be considered good or bad; neither a sign of success nor failure.[7] It will be appropriate to sum up this section with the conclusion of UN study ".......the model based on the

standard equation is not intended to be used as a coin-in-the slot machine which would turn out projected output levels by mechanical computation. To make a justified estimate of these levels, it is necessary to take into consideration all the information available on the country's specific economic, institutional and other pertinent characteristics ....in addition to the pertinent characteristics referred to above, activity of the public sector and government intervention provided for in the plan may significantly influence the pace and pattern of development, which is exactly the objective of development planning."[8]

3.3 Observed Patterns of Industrialisation

Based on the analysis of the preceding sections, we have already concluded that a single pattern of industrialisation with universal application and validity is the remotest possibility. At the same time, the information regarding the diverse patterns exposes various issues of industrialisation that could be very useful for the economies which aim at achieving higher economic development. Therefore, in this section, we would try to study and analyse some observed patterns that could illustrate major features of industrial development experienced in the past. These patterns, which may be classified as (i) Evolutionary and revolutionary; (ii) Agglomerated and dispersed; and (iii) Modern and traditional, are discussed below.

3.3.(i) Evolutionary and Revolutionary

This kind of pattern lays greater stress on the types of industries that are likely to be established as industrialisation develops through various stages. According to evolutionary pattern, the process of industrialisation 'evolves' itself over a considerable period of time. Most of the European countries and America are said to have industrialised along this pattern over the period. This pattern is 'open', 'unplanned' and 'capitalistic' in nature because in most of the cases such type of pattern emerged in a free market economy, where the process of industrialisation proceeded effortlessly spreading over centuries. The highlight of this pattern is that industrial activities start with concentrating on consumer goods industries which are then slowly replaced by capital goods industries. Therefore, changes in sectoral distribution of income and employment takes place slowly in favour of secondary and then tertiary sector as a result of changing process of development over time.

In contrast to this, USSR is identified as the only country which has experienced revolutionary pattern of industrialisation over the period. Other socialist countries have followed the Soviet model by and large. The pattern has earned its name by virtue of the methods that made industrialisation possible in a shorter span

of time. Unlike evolutionary pattern, in this system
capital goods industries initiate the process, lending
support to the development of consumer goods industries
at a later stage. Thus, it enables saving of time and
is, therefore, deemed to be best suited for the so
called 'latecomers'. However, a considerable amount of
resources have to be mobilised. This calls for
sacrifice of the present pleasures for future gains,
which does not seem to be a feasible proposition for a
democratic society like India characterised by the mass
poverty and unemployment. By and large, this pattern
thrives in socialistic economies and is, therefore,
'socialist', 'autocratic' and 'planned' in nature.
However, because of its employment, India has also
experienced a sudden shift in sectoral distribution of
income and employment from primary to tertiary. This
way, it differs from the usual sequencing of the
evolutionary pattern of industrialisation.

3.3.(ii) Agglomerated and Dispersed

This kind of pattern of industrialisation is
associated with the problem of regional disparities
which is not confining to developing countries alone but
is tormenting the developed nations also. It seems to
be an offshoot to the principle of 'polarisation' and
'spill over effects' and is biased towards concentration
of industrial activities at few locations. Agglomerated

pattern describes the clustering of industrial activities in one or few spatial units. This tendency is commonly in vogue in LDCs where a few spatial units become popular among entrepreneurs obviously because of the following reasons.

Firstly, such clusters emerge at certain spatial units owing to mainly the availability of infrastructural facilities resulting in economies of scale. Besides, in due course of time, linkages in regard to production, service and market encourage further clustering of industries at such locations. Concentration of such forces leads to concentration of industrial activities. This further sets in motion a set of other forces that encourage further concentration.[9]

Fortunately, if there are some forces that tend to localise an industrial activity at one particular place for the reason cited above, there is a set of other forces promoting the spread and diversification of industrial activities to some other places. This kind of process leads to dispersed pattern of industrialisation wherein industrial units/activities spread over the entire area rather than concentrating at few locations. Therefore, owing to this attraction, all the countries especially LDCs, that are plagued by the problem of uneven regional development, aim at achieving

the objective of dispersed pattern of industrialisation
to cope up with the problem of regional disparities.

3.3.(iii) Modern and Traditional

Most of the LDCs share a common colonial past which
has jeopardised the direction of their process of
development. The economies of these countries were
opened to outside forces in such a fashion that while
some part of their economy came into direct contact with
highly developed world, the rest of the economy remained
isolated. This gave birth to the problem of dualism,
which was not confining to their economic but also
social, financial and technological aspects. These
historical circumstances have given rise to unique
pattern of industrialisation and thus have demonstrated
sharp differences in levels of technology used in modern
and traditional sectors. In such a system, both ultra-
modern highly capital intensive units, usually larger in
size co-exist with traditional units, using indigeneous
technology (most of the time simple and obsolete) and
are labour intensive in nature, smaller in size,
manufacturing inferior quality consumer goods for local
markets. Apart from this classification, Alexander
Greschenkron a famous economist historian has given
eight variabilities in the nature of industrialisation
which "present themselves in the convenient shape of

contrary pairs". Accordingly, industrialisation may be classified as :

   (i)   autonomous or derived,

  (ii)   forced or autonomous,

 (iii)   concentrating on consumer or producer goods,

  (iv)   occurring within an inflationary or a stable monetary environment,

   (v)   involving merely quantitative changes or being in addition, characterised by far reaching structural transformation,

  (vi)   proceeding continuously or discontinuously,

 (vii)   proceeding in condition of progress in agriculture or of stagnation if not retrogression, and

(viii)   motivated primarily by economic or political aim.[10]

This long list of classification of the nature of industrialisation simply tells that there could be a whole range of patterns of industrialisation. Due to the involvement of numerous factors that keep changing from one place to another, the element of diversity easily makes a place for itself. Therefore, it must be borne in mind that the patterns are not to be studied for any normative judgement but for guiding scholars regarding the occurrence of a similar kind of pattern in case of industrialisation.

3.4 Determinants of the Patterns of Industrialisation

One of the reason for undertaking a detailed study of the pattern of industrialisation is also to trace out the factors that are responsible for making up the pattern or showing variations from its general path. The argumentation in the foregoing sections threw adequate light on this issue. The important conclusion emerges that there are numerous factors responsible for determining the pattern of industrialisation. These can be listed as economic, social, political, demographic, geographical and historical. For instance, most of the studies quoted earlier point out that local availability of factors of production in the vicinity of unit location such as natural resources, human resources and capital stock in relation to external and internal markets is one of the important determinant of the pattern. Countries having significant mineral deposits or petroleum reserves undertake smelting and refining operations at relatively lower level of development, although such activities require greater capital and higher technology assistance.[11]

The level of existing technology or access to stock of technical knowledge is another important determinant of the pattern. Manufacture of some consumer durables such as furniture making that uses simple technology and does not involve significant economies of scale tends to begin at a much earlier stages of development.

Similarly, access to higher technology allows for the establishment of much technical operations than would have otherwise been possible.[12]

The third important factor influencing the pattern is said to be the social objective and policy choices. For instance, if a country adopts an export-oriented strategy of development based either on the processing of local raw materials or on assembly operations, the commodities can be manufactured even well before the local market is large enough to support such industries. In juxtaposition, an import-substitution strategy of development can alter the sequence of industrialisation by providing tariff protection and other incentives which permit industries with significant economies of scale to be established earlier than would have been the case in an internationally competitive environment.[13] Besides, a choice of capitalistic or socialistic pattern, depending upon the political set up can also affect the pattern that would eventually emerge in a country.

Fourthly, the size of country (based on population) and nature of the economy (based on the dominance of a particular economic activity) is being held as yet another determinant of the pattern by many scholars. In larger countries, the domestic market is usually large, natural resources are more diversified and internal

transport costs are higher, therefore emphasis gets
shifted from external to internal market and domestic
sources of supply. On the other hand, smaller
countries, due to smallness of markets, less diversified
resources and availability of foreign capital are in a
position to enjoy the benefits emerging out of external
trade.[14] The pattern of industrialisation, developed or
developing under these two different situations over the
period is bound to show significant variations.

In addition to the aforesaid factors, certain
specific studies have also emphasised some other
important factors influencing the pattern to a
considerable extent. For instance, H. Chenery lays
stress on 'Universal factors' (such as common technical
knowledge, similar human wants, access to same markets
for export and import, the accumulation of capital as
the level of income increases, increase of skills as
level of income increases) for imparting consistency to
the patterns of industrial development.[15]

R.B. Sutcliffe lays greater stress on the relative
backwardness of the economy in relation to other
countries on the eve of industrialisation and also its
relationship with both more advanced and more backward
countries of the World.[16]

While summing up, we can conclude that owing to
inter-country differences in geographical, historical,

demographic, social, economic and political factors, one can hardly expect occurrence of uniformities* in the path, pattern and performance of industrialisation. The diversity seems to be obvious. But the study and analysis of the factors that are responsible for such variations are definitely meaningful from the view point of enhancing knowledge and deducing policy implications for remodelling future directions.

3.5 Path, Pattern and Performance : (The Three Ps)

Indeed, the pattern of industrialisation, which is made up of numerous factors, exposes the industrial sector to certain parameters. Presuming this, two major parameters as identified are taken into account in the present context to describe the pattern, i.e., first, the 'composition' of the industrial sector and second, its 'contribution' to overall economy. A combination of both greatly helps in identification of the pattern of industrialisation. Drawing from the argumentations of the previous section, one can safely conclude that the pattern determines the pace and performance of industrial sector. So, at different cut-offs of the long period, different levels of industrialisation are likely to occur. These different levels once synthesised together result in the long term pattern of industrialisation.

As a matter of fact, the pattern, which results in performance, is itself determined by the path. More precisely, all the three Ps — path, pattern and performance — are closely associated with each other and also subject to the chain reaction, as would be evident from the following diagram :
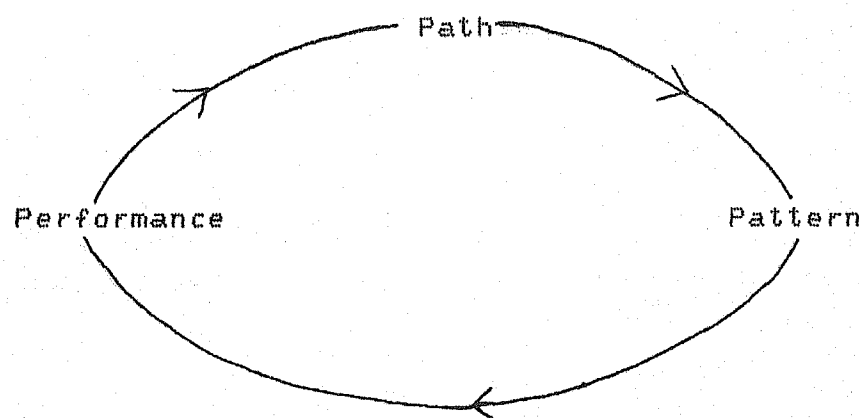
3.5.(i) <u>Factors</u> <u>Determining</u> <u>Path</u>

Owing to differences in economic, social, political, geographical and historical factors, the choice of path of industrialisation differs from country to country. The role of policies and objectives is most crucial in determining the path of industrialisation for a country. The path, thus determined, provides indications to follow the pattern. A list of plausible factors guiding the path is given below.

   (i)   Potential in terms of the availability of
         various factors of production including
         inputs. This influences the supply of
         resources

(ii)   National income, its growth and distri-
        bution. This affects the demand for manu-
        factured goods

(iii)   Institutional factors, especially those
        associated with marketing, finance and
        technical training

(iv)   Infrastructural facilities like road,
        transport, power and water

(v)   Government policy regarding the export
        promotion or import substitution

(vi)   General economic environment particularly
        laws pertaining to protection tariff and
        other incentives

(vii)   Political set up and its stability

(viii) Human capital and social capability

(ix)   Inter-country relations

3.5.(ii) Factors Constituting the Pattern

The path, thus, evolved through the aforesaid
factors undoubtedly helps in identification of the
likely pattern which can be divided into sectoral and
spatial aspects of industrialisation. While the former
is concerned with macro processes of industrialisation,
the latter relates to locational aspects of the indus-
trial sector of an economy. The major factors constitu-
ting the pattern are as follows:

(i)   Consumer and capital goods industries

(ii)   Large and small scale industries

(iii)   Labour-intensive and capital intensive
        industries

(iv)   Internal and external market oriented
        industries

(v)   Export   and   import biased   growth   of
        industries

(vi)   Composition. of workers - skilled, semi-
        skilled and unskilled

(vii)   Locational aspects of industrialisation.

3.5.(iii)   Indicators of Performance

The pattern, thus, evolved will influence the pace
and progress of industrialisation. Moreover, it will
significantly contribute to the performance of indus-
trial sector in terms of output growth and employment.
Thus, the sector, in turn, will have a larger share in
total income and employment at both the national and
state levels. This kind of chain reaction will continue
unless the choice of all the three 'Ps' becomes the most
profitable proposition.

3.6 Analysing the Emerging Situation

On the basis of the analytical framework provided
so far, we can visualise the emergence of two distinct
pattern in two different situations, namely highly
industrialised   economies   and   relatively   less
industrialised economies. The pattern in these two
extremely opposing situations differs greatly on account
of both 'composition' and 'contribution'. The general
pattern of the highly industrialised economies regarding
the composition shows that industrial sector is largely

organised. The sector, being large, is capable of providing employment to a larger proportion° of the labour force. With the availability of greater stock of capital, the industrial units are capital intensive in nature and using modern technology. Owing to these favourable conditions, the products are biased to mainly manufacturing of intermediate and capital goods, of which a lion share is exported to other countries.

On the other hand, the pattern revealing the composition of industrial sector in less industrialised economies is entirely different. A major part of the manufacturing sector is unorganised. The size of the industrial sector is small and its contribution to total income and employment is relatively low. There is scarcity of capital and most of the units are labour intensive as well as smaller in size, heavily depending upon the use of traditional technology. The production under such conditions is mainly need based and of inferior quality, not capable of competing in the foreign market.

Resultantly, the contributions of the industrial sector also show a wide difference. In highly indus- trialised economies, the contribution of the secondary sector to total income is generally found to be substantially high. Even within this sector, manufacturing is the leading one and is dominated by heavy capital goods industries. Being large in size, it

is capable of providing employment to a substantial proportion of the labour force, which is mostly skilled or semi-skilled.

Contrary to the above, in less developed economies, the contribution of the industrial sector to total income is low as compared to agriculture. Within the sector itself, mining and construction together occupy an important place and its contribution is nearly matching with that of manufacturing. Moreover, manufacturing is dominated by light consumer goods industries. The sectoral contribution to total employment is comparatively low. Due to smallness of the size of the sector, the use of modern technology is largely restricted obviously because of narrow base of the sector and paucity of funds with entrepreneurs.

Thus, the pattern of industrialisation that emerges in two different situations indeed shows a significant difference between highly industrialised economies and less industrialised economies. The former is heavily biased towards large scale units that are capital intensive in nature and manufacture mainly capital goods. While the latter is characterised by small scale units, labour intensive in nature and generally manufacturering light consumer goods.

However, in majority of LDCs, due to growing dualism these two different patterns co-exist in the

same economy aggravating the problem of uneven regional development.

Viewing the Indian scene against this background, we notice that the pattern of industrialisation existing in India is fairly comparable with those of the LDCs. The state economy also operates under dualism; both modern and traditional sectors co-exist and work simultaneously. The traditional sector is mainly characterised by small scale, village and cottage industries that are operating mostly in the unorganised sector. Besides, conventionally conservative entrepreneurship and scarcity of physical and human capital have restricted the use of modern technology to a large extent. With the result, contribution of industrial sector to the total income of the State is far behind the agriculture. In spite of these limiting factors, with the strong network of industries available at the micro-level, the state of Uttar Pradesh is surely poised for a much more speedier process of industrialisation not before long.

3.7 Conclusion

An investigation into the pattern of industrialisation as demonstrated by the literature reveals that a typical uniform pattern is neither feasible nor desirable. The industrial experience of each country is

unique due to involvement of numerous factors that keep on changing over time and space. Therefore, diversity in the pattern is obvious. However, a study of diversity brings out the importance of various factors constituting the pattern. Also it carries special significance in view of the fact that the pattern has great bearing on the performance of the industrial sector.

The pattern of industrialisation reveals the 'composition' of the industrial sector as well as its 'contribution' to the total income. On the basis of these parameters, highly industrialised and less industrialised nations exhibit distinct patterns of industrialisation. India and particularly the state of Uttar Pradesh cannot be an exception to it. The pattern that we prefer today is truly speaking an outcome of our goals/policies leading to a certain level of performance. Looking to its overwhelming importance, we have, therefore, decided to carry out a detailed analysis of the sectoral/spatial patterns of industrialisation in the context of Uttar Pradesh in the subsequent chapters of the dissertation.

Notes and References

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CHAPTER IV

SECTORAL PATTERN OF INDUSTRIALISATION

4.1 Introduction

The industrial pattern, as analysed in the previous chapter, consists of two major aspects, i.e., sectoral as well as spatial. The former concerns with sectoral performance and structural changes of the economy while the latter relates to regional dimensions of industrialisation and demonstrates dispersal of industrial activities over the space. To be more specific, the sectoral pattern of industrialisation broadly concerns with the 'composition' and 'contribution' of the secondary sector. However, as pointed out earlier, it is a difficult proposition to earmark the net contribution that may be fully ascribed to a particular sector. This is primarily due to inter-dependence of the sectors. In fact, neither any sector nor for that matter any particular factor can be exclusively held responsible for industrialisation or overall development.

Industrialisation, in the present times, has gained currency for accelerating the process of development and increasing productivity which, in turn, increases per capita income. Besides, it has greater potentialities to promote import-substitution and increase exports as

compared to what is possible through primary sector.[1]
But any endeavour to study performance of the industrial
sector in isolation of other sectors of the economy will
be both half-hearted and less rewarding. Therefore,
within the broad frame of the national economy, we
propose in this chapter to analyse changes in sectoral
pattern of industrialisation especially in regard to the
organised manufacturing sector of Uttar Pradesh during
the period of the study.

It would be worthwhile at this juncture, to
comprehend that temporal changes reflected in the
sectoral pattern may be the consequence of the
variations or modifications in the policy inputs
provided by the government from time to time. This
necessiates a brief review of the structure of economy
before we concentrate on analysing the sectoral pattern
of industrialisation.

Hence, the present chapter is arranged in three
major sections; we begin with the general analysis of
inter-sectoral pattern of the economy in respect of
developed and developing countries and then take up the
task of India as a whole and the State of Uttar Pradesh
in particular. Thereafter, an attempt has been made to
recapitulate, in brief, the general policy framework
with a view to better analysing the relationship between
the policy and performance of the industrial sector. In

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the same section, inter-state disparities in levels of industrialisation have also been analysed to understand the status of Uttar Padesh vis-a-vis other States and the country as a whole. Finally, the last section is devoted to analysing the pattern of industrialisation pertaining to the organised industrial sector of Uttar Pradesh in greater detail. This has been done for the organised manufacturing sector taking into account the various classifications (based on size, input used, or output produced) and the disaggregated structure of industries so that the changes in relative performance/position of industry groups could also be examined and analysed during the reference period of the study.

4.2 Inter-sectoral Pattern of the Economy : (Section- 1)

Broadly, the overall economy is divided into three major sectors namely; Primary, Secondary and Tertiary. The changes in the inter-sectoral performance of the economy, over the period, separately for developed and developing countries are discernible from Table 4.1.

It is seen from the Table 4.1 that the sectoral pattern of the economy, which has been experienced in developed countries, by and large, goes in conformity with the theory of economic growth professing that as the process of development picks up the momentum, the share of the primary sector in the total income goes on

Table 4.1 : <u>Sectoral Contributions to Gross Domestic Product (GDP) : 1965-86</u>

(Percentage)

Countries	Primary		Secondary		Tertiary	
	1965	1986	1965	1986	1965	1986
Developed						
1. United States	3	2	38	31	59	67
2. United Kingdom	3	2	46	43	51	55
3. France	8	4	39	34	53	62
Developing						
1. India	47	32	22	29	31	39
2. Egypt	29	30	27	29	44	41
3. China	39	31	38	46	23	23

Source : World Development Report, 1988.

declining while those of secondary and tertiary sectors
experience upward movements.[2] On the contrary, the
sectoral pattern, as demonstrated in the case of
developing countries, seems to fall out of sequence; as
the tertiary sector is not the last sector to develop.[3]
It rather develops simultaneously with primary and
secondary sectors. Besides, the other points of
difference observed in the growth/performance of the
tertiary sector in these two differing economic
situations is that in the developed countries, the
tertiary sector is capital-intensive; having the high
per capita productivity. It is property-induced and
emerging out of surplus of primary and secondary

sectors. In contrast, this sector in developing
countries is characterised as labour-intensive and
qualifies for low per capita productivity only. Arising
out of the scarcity of employment in primary and
secondary sectors, it is poverty-induced in these
countries.[4]

It is also clear from the Table 4.1 that over the
period there have been some structural changes in
developing countries. In spite, the agrarian structure
is still predominant and transformation of the economy
is far behind the desired one.

Besides, we also notice that sectoral contribution
to Gross Domestic Product (GDP) both on all-India level
and the State of Uttar Pradesh are fairly comparable
with what we have experienced in the context of Less
Developed Countries (LDCs), as would be evident from the
Table 4.2. The table points out that there has been
some significant transformation in the national economy
including U.P. over the period of previous two decades.
However, the changes seem to have been more pronounced
on the all-India level as compared to the State of Uttar
Pradesh. The primary sector in the former case has
declined from 50.1 per cent in 1970-71 to 35.2 per cent
during 1989-90, while the shares of secondary and
tertiary sectors have, during the period, gone up from
19.7 per cent to 25.5 per cent and from 30.2 per cent to

Table 4.2 : <u>Sectoral Contributions to Gross Domestic Product (GDP) : 1970-90</u>

(Percentage)

Period	1970-71		1980-81		1985-86		1989-90	
	India	U.P.	India	U.P.	India	U.P.	India	U.P.
Primary	50.1	60.2	42.6	54.7	37.7	49.6	35.2	43.9
Secondary	19.7	14.9	20.9	18.9	21.3	22.5	25.5	18.9
Tertiary	30.2	24.9	36.5	26.4	41.0	27.9	39.3	37.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note : The data for years 1970-71, 1980-81 and 1985-86 are at constant prices of 1970-71, while that of 1989-90 are based on constant prices of 1980-81.

Source : State Income Estimates, various issues, Bulletin No. 238 and 219 Economics and Statistics Division, State Planning Institute, Lucknow.

39.3 per cent respectively. Though the shares of these sectors have moved in accordance with the sequence backed up by the historical process of development, yet the contribution of primary sector to total income is still substantial particularly in respect of U.P. As a matter of fact, the changes in output structure seem to have been biased to development of the tertiary sector both at all-India and U.P. levels probably because of paucity of job opportunities in primary and secondary sectors.

Regarding the State of Uttar Pradesh, a similar trend in the sectoral pattern of economy is noticeable during the period. The share of the primary sector has declined from 60.2 per cent to 43.9 per cent, and both secondary and tertiary have gone up from 14.9 per cent to 18.9 per cent and from 24.9 per cent to 37.2 per cent respectively during the period of 1970 to 1990.

Nevertheless, the economy of the State is less diversified as compared to that of the all-India level; it is still predominantly agrarian. Even at the latest point of time (i.e. 1989-90), it is seen that primary sector claims the highest share (i.e. 43.9 per cent). Moreover, the secondary sector has not shown any significant increase. Besides, the decline in the share of primary sector has gone more in favour of the tertiary sector and less in favour of the secondary sector. As pointed out earlier, in developing countries like India, the growth of service sector has been poverty-induced and labour-intensive in nature. Actually, the industrial sector both at the national and the State levels is not generating adequate number of jobs nor is the agriculture potentially so strong to absorb additional labour force. Therefore, the burden of additional labour force falls on tertiary sector which will have to shoulder this responsibility till the time balanced growth is not ensured through reorganisation and redistribution of the economic

activities.   This pattern of tertiary sector   seems   to
differ from the general pattern observed in the case   of
developed countries especially on two grounds;   firstly,
the   tertiary sector has become predominant even   before
the   economy   could   become   highly   industrialised.
Secondly,   the   share   of tertiary   sector   in   national
income   is much larger than its corresponding   share   in
employment.[5]   Hence,   the   existing 'premature   tertia-
risation'   is needed to be handled carefully.   It   calls
for a separate study so that its findings could be   used
for deriving meaningful policy implications.

Generally,   the   factors,   which   make   significant
contributions   to industrialisation, consist   of   mainly
the availability and prices of inputs from   agriculture,
animal   husbandry,   forestry   and   mining;   the
characteristics of social infrastructure; public utility
services   and   their   prices; and   the   whole   gamut   of
commercial   services.[6]   However, agriculture   seems   to
have an overwhelming weight in accelerating the pace and
the process of industrialisation in developing economies
like   Uttar   Pradesh.   As   a   matter   of   fact,   the
relationship between agriculture and industry involves a
range   of   issues   which is so   large   that   it   becomes
difficult   to   cover   all   of   them   in   the   analytical
framework   like   the present one.   It   is,   therefore,
deemed necessary to be selective for the purposes of the
present analysis.

It is undenying the fact that agriculture plays two
critical roles during the process of industrial develop-
ment. It provides food for industrial workers. It
earns foreign exchange and hence functions as machine -
producing sector of the economy, besides raising the
consumption of marketed agricultural products.[7] Based
on this discussion one can hypothesise that a critical
minimum level of agricultural development is invariably
needed for triggering off the process of industriali-
sation.

Regarding the aforesaid hypothesis, it is
worthwhile to record the experiences of a previous
study, highlighting the inter-relationship between the
two during Eighties.[8] It was observed that the
coefficient of correlation 'r' between the district-wise
composite indices of agricultural development and those
of industrial development in Uttar Pradesh was 0.46
during each of the years 1971 and 1981. This shows that
there does exist a positive relationship between the two
but the value of 'r' is not so significantly high that
one could argue for high degree of association between
them. Micro-level observations also support it. For
example, in the year 1981, out of 54 districts of the
State only 11 districts were identified as those having
high level of agricultural development, but only three
of them (Ghaziabad, Meerut and Saharanpur) could stand
for high level of industrial development. Obviously,

the remaining eight districts although having high level of agricultural development but qualified for lower levels of industrial development.

Moreover, in an opposing situation it is also observed that only seven out of the fourteen districts, which qualified for very low level of agricultural development, could qualify for low level of industrial development. More precisely, the seven districts although having low level of agricultural development, but stood at higher level of industrial development. This shows that even if some districts are not agriculturally advanced, they can secure higher levels of industrialisation through different kinds of promotional and protective measures. Hence, it seems that a critical minimum level of agricultural development is not necessary; however it may be a desirable condition. This way, agricultural advancement becomes an added advantage of an area to initiate and promote industrialisation relatively at a faster speed than the one which could do so in its absence.

4.3(i) Induastiral Sector : Policies and Performance : (Section - 2)

Planning has become popular all over the World. Whereas the 'West' is doing it for maintaining the tempo of development, the 'East' has made it the very basis of its political philosophy. Besides, the emerging group

of developing 'South' has no other way but to plan to
achieve higher growth rates in a comparatively shorter
span of time with the use of scarce resources like
capital. The past experience of the developed nations
has amply demonstrated that industrialisation is always
instrumental in accelerating the process of growth and
development. Hence, the acceptance of industrialisation
as a priority sector in Less Developed Countries (LDCs)
especially India, appears to have been an appropriate
and meaningful choice.

Moreover, traditionally, industrial development as
well as structure of economy are deemed to be influenced
by the various socio-economic and political factors such
as natural and human resources, capital stock, marketing
and infrastructural facilities, attitude of the people
and political set up. However, a wide range of
industrial pattern showing both, different levels of
achievement and follow up of different approaches, even
among countries with similar socio-economic conditions,
strongly suggest that apart from the aforesaid factors,
policies do play a very crucial role in industrial
development.[9] Actually, the adoption of different
policies/packages by different countries in accordance
with their different needs and potential, influences the
use of existing and the newly developed resources.
Moreover, these policies also determine technical and
economic structure of industries, affecting capital-

labour ratios, capital utilisation, the scale, location
and distribution of plants and firms and the degree of
emphasis on competitiveness and barriers to entry by new
enterprises.[10]   If seen from the closer quarters, these
will appear as those very characteristics that determine
the quality and pace of industrial development.   Thus,
in the nutshell, the policies have a crucial impact on
the industrial pattern that finally gets reflected in
the overall performance of the economy.   In the
subsequent sections, an attempt has, therefore, been
made to study and analyse the performance of industrial
sector in the light of the policy framework.

4.3(ii) Indian Experience

It is well known that Indian economy on the eve of
independence was beset with many socio-economic and
political problems.   In addition to general economic
backwardness, a long history of alien colonial rule
stretching for centuries had distorted the process of
industrialisation to a great extent.   As a result,
regional disparities as well as structural imbalances
emerged.[11]   It would not be wrong to say that we
initiated our development process with a large
traditional agricultural sector and comparatively very
small modern industrial sector.   Besides, industrial
sector with a very narrow base had a very limited scope
of its flourishment.[12] Within the industrial sector

itself, both the structure and form of production
greatly varied ranging from domestic crafts to modern
large scale undertakings. The capital was scarce and
there was almost an absence of a mechanism to
redistribute capital funds for further investments. The
infrastructure in general and the component of power,
roads and transport in particular was deficient and much
below the requirements. In sequel, industrial
undertakings were considered risky due to smallness of
the market, strong foreign competition and inadequate
technical and organisational know-how. This led to a
pessimism among private entrepreneurs to undertake
industrial activities. [13]

These obstacles to industrialisation could be
overcome only by a comprehensive framework of policy
inputs which not only underlines the basic objectives to
be pursued but also high degree of emphasis to be given
to each of them in accordance with the requirement and
potential of the economy to realise the desired socio-
economic development. Therefore, soon after the
attainment of independence, broad objectives were laid
down in the shape of various Five Year Plans and
Industrial Policy Resolutions. A reflection of these
efforts is discernible from the pattern of development
and industrialisation that has taken shape so far. In
this context, it will be meaningful to briefly overview
the major objectives of Indian economy. The main thrust

of different plans and policies has been to achieve
economic growth and raise the per capita income through
accelerated industrial development. The Table 4.3
provides adequate support in favour of this statement.
The outlay of industrial sector including mineral, as
shown in the Table 4.3, has increased from plan to plan
both at the national as well as the State level.

Table 4.3 : Percentage Share of Industrial Sector
(including Mineral) in the Total Plan
Outlay

(Percentage)

Plans	Share of Industrial Sector in Plan Outlay	
	India	Uttar Pradesh
First Plan	5.0	4.2
Second Plan	24.1	5.5
Third Plan	22.9	3.7
Three Annual Plans	24.7	4.0
Fourth Plan	19.7	3.7
Fifth Plan	24.3	4.7
Annual Plan	21.7	5.0
Sixth Plan	15.5	6.5
Seventh Plan	12.3	6.5
First to Seventh Plan	15.6	6.1

Source : Derived from Appendix IV.1 and IV.2.

To streamline the development of industries along a chosen pattern, a National Industrial Policy was framed which can be traced back in the policy resolutions of 1948, 1956, 1973 and then in 1980, 1985 and 1988. The policy resolution of 1956, however, still forms the basic foundation of industrial pattern in India. It incorporates the following objectives :

(a) Rapid industrial growth with special emphasis on heavy basic and capital goods industries to be developed exclusively in the public sector;

(b) Prevention of concentration of economic power in private hands;

(c) Reduction of regional imbalances;

(d) Promotion of self-reliance through export-promotion and import substitution.[14]

All these objectives have been repeatedly emphasised in various Five Year Plans. However, in practice, it seems that efforts have been largely concentrated on industrial growth which has been pursued more vigorously than any other objective. As a result of these efforts, the pattern of industrialisation that emerged was heavily biased towards large/medium scale industries while the growth of wage goods sector demonstrated slow pace mainly because of less

prioritisation.[15] This resulted in imbalances and distortions in the economy so much so that there was capital 'deepening' rather than widening, increase in unemployment, widening of disparities and greater urban concentration, rise in inflationary pressures together with rise in the gap between installed and utilised capacity of plants and firms. This precipitated stagnation of real investment and foreign exchange difficulties.[16] These occurances aroused a clamour among the planners to reconsider the issue of priorities laid in the earlier industrial policies. Hence, a radical departure was made in the Fifth Five Year Plan (1974-79) to restructure the pattern of production in favour of goods of mass consumption. As an instrument of eradication of poverty, the planning strategy then laid greater emphasis on the development of cottage and small scale industries.

The recent industrial policies of Eighties have further deviated from the basic strategy of Indian planning as the very validity of the 'trickle down' principle is being challenged. The emphasis has now shifted to employment generation and correction of balance of payments and a definite move has been made towards liberalisation and privatisation in order to make the economy more friendly to market economy.

The states and Union Territories in general do not have their own industrial policy. They follow the national policy with certain modifications suiting the local needs and availability of resources. The State of Uttar Pradesh is no exception to it. It works with the suitably modified industrial policy within the broad framework of the national level policy.

Accordingly, efforts were made in the past to ensure maximisation of employment opportunities and to have a dispersed growth of industries, up-grade scientific and technological capabilities and provide various incentives and concessions including infrastructural facilities such as setting up of DICs etc., besides accelerated development of identified industrially backward areas such as 'zero industry district'. It was expected that this would lead to rapid industrialisation in the State and also ensure dispersal of industrial activities. These efforts have brought about considerable changes in industrial scenario of the State, leading to strong industrial base and its diversification especially from the Fifth Plan onwards. Having discussed briefly the industrial policy, we now intend to analyse the changes pertaining to the State economy of Uttar Pradesh underlining the impact of policy inputs on the sectoral pattern of industrialisation that has emerged over the period.

4.3(ii) Inter-State Scenario

Balanced regional development has always been one of the priorities of our planning strategy. The very First Five Year Plan states that 'if industrial development, in the country is to proceed rapidly and in a balanced manner, greater attention will have to be paid to the development of those States and regions which have so far remained backward'.[17] This view has been expressed throughout the planning period and emphatically recognised in the industrial policy resolution of 1956. In spite, the experiences of various regions paint unfortunate scene in the sense that fruits of planning have not been percolated to them evenly, due to various reasons. With the result, the problem of regional disparities still remains to be sorted out. In fact, in some cases the situation has worsened over the period. This feature makes it reasonably relevant to compare in terms of certain selected indicators the relative position of various States before one can take up a study confining to a single state. Therefore, in the present section it is deemed worthwhile to compare the position/status of Uttar Pradesh with other States and nation as a whole in respect of the following selected indicators (Appendices IV.3 and IV.4A and B) :

(i) Percentage of industrial workers to total main workers;

(ii) Average daily number of workers in registered
     working factories;

(iii) Value added per industrial worker; and

(iv) Contribution of industrial sector to State
     domestic product (SDP).

     According to a closer examination of Appendix IV.3,
the State of Uttar Pradesh, in respect of percentage of
industrial workers to total main workers stands at the
tenth position among the fourteen major States of India.
Moreover, in respect of average daily number of workers
engaged in registered working factories per lakh of
population, Uttar Pradesh with 450 workers against the
national average of 754 workers for 1986-87 again
qualifies for the tenth position.

     Appendix IV.3 also demonstrates that the State of
Uttar Pradesh in terms of value added per industrial
worker was lagging behind as many as seven States
occupying the eighth rank among the fourteen major
States under consideration for the year 1986-87.

     Analysing the data across the fourteen States of
India at the two points of time (1980-81 and 1989-90) as
given in Appendices IV.4 A and B, we notice that the
share of the secondary sector in the state income of
Uttar Pradesh, which stood at 16.3 per cent in 1980-81

and 19.8 per cent in 1988-89, fell short of the national

average of 22.9 per cent and 24.1 per cent respectively.

Besides, the State of Uttar Pradesh in the same context

lags behind as many as 11 and 9 States in 1980-81 and

1988-89 respectively. Thus, the foregoing analysis helps

us to conclude that in the inter-state setting, despite

showing some improvements, Uttar Pradesh still remains

to be one of the industrially backward States of India.

4.4(i) Inter-Sectoral Pattern of Industrialisation in U.P. : (Section - 3)

Having analysed the sectoral pattern of the economy

for India and U.P. vis-a-vis other States, now we

proceed to analyse, in greater detail, the pattern that

exists within the industrial sector of the economy in

U.P. The secondary sector has three components viz.,

(i) Manufacturing, (ii) Construction, and (iii) Gas and

electricity. However, being the dominant sub-sector in

terms of its contribution to the total income

originating from the secondary sector, the overall

development of industrial sector can adequately be

gauged by studying the performance of the manufacturing

sector alone. Therefore, our subsequent analysis is

confining to 'Manufacturing sector' only.[18] The

sector-wise contributions to the State Domestic Product

(SDP) of U.P. at three points of time are given in Table

4.4.

Table 4.4 : <u>Sectoral Contribution to State Domestic</u>
<u>Product (At 1970-71 Prices)</u>

(Percentage)

Sector	1970-71	1980-81	1986-87	Compound Growth Rate 1970-71 to 1986-87
I. Primary	60.2	54.7	49.6	2.2
Agriculture	58.4	53.3	48.1	2.2
II. Secondary	14.9	18.9	22.5	6.6
Manufacturing	8.9	10.9	14.7	7.4
(i) Organised	4.4	4.5	6.6	6.9
(ii) Unorganised	4.5	6.4	8.1	7.8
III. Tertiary	24.9	26.4	27.9	4.6
Total	100.0	100.0	100.0	3.6

Source : State Income Estimates, (1970-71 to 1986-87),
Bulletin No.219, Economics and Statistics
Division, State Planning Institute, U.P.

The Table 4.4 demonstrates that the share of
manufacturing has, no doubt, gone up over the period but
the pace is slow and not very significant in magnitude.
The share of manufacturing sector, during the period

from 1970-71 to 1986-87 has increased from 8.9 per cent to 14.7 per cent only.

Manufacturing as a sector is further divided into two sub-sectors namely : organised and unorganised. Table 4.4 shows that during the period of the study unorganised sector continued to fare better than the organised sector. The contributions of these sub-sectors to the State Domestic Product (SDP) during the year 1970-71 were almost the same. But the corresponding contribution of unorganised sector during the year 1985-86 was significantly higher (8.1 per cent) than 6.6 per cent of the organised sector.

However, the new series of the estimates of the State Domestic Product based on 1980-81 prices paint almost a different picture, as would be evident from Table 4.5. It is clear from the table that even in the new series (with 1980-81 as base) the shares of organised and unorganised sectors in SDP during 1984-85 followed the similar pattern that existed previously (with 1970-71 as base) indicating that the figures in both the series are fairly comparable. However, a minute observation of Table 4.5 suggests that there was a change in the previous pattern. Since 1985-86 onwards, the share of organised sector outgrew that of unorganised sector and this trend continued to exist till 1989-90. Favouring to this, it is also observed that the growth rate of the contribution of the

Table   4.5 : Contribution of Manufacturing Sector to
                State Domestic Product (SDP) at 1980-81
                Prices

(Percentage)

Year	Contribution of		Total Manufac-turing Sector
	Organised Sector	Unorganised Sector	
1984-85	6.3	6.6	12.9
1985-86	7.4	6.4	13.8
1986-87	7.1	6.8	13.9
1987-88	7.4	6.8	14.2
1988-89	7.4	6.7	14.1
1989-90	7.2	6.7	13.9
Growth Rate : Over the period	7.8	5.0	6.4

Source : State Income Estimates, (1980-81 to 1986-87),
           Bulletin No.238, Economics and Statistics
           Division, State Planning Institute, U.P.

organised sector in absolute term during the period

1984-85 to 1989-90 was much higher (7.8 per cent) as

compared to the corresponding growth rate (5 per cent)

of the unorganised sector as against the average of 6.4

per cent for the manufacturing sector.

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However, in case of employment, the unorganised sector still continues to contribute significantly (87.9 per cent) to the total employment of the manufacturing sector during 1988. The contents of the Table 4.6 also substantiate this fact. Thus, in this context the issue boils down to a more problematic choice of the emphasis between the two that has to be accorded while keeping employment or income oriented objectives in mind.

Table 4.6 : Employment in Manufacturing Sector of U.P.: 1978-88

Sector	Employment of Persons (in Lakhs)		Compound growth rates during the decade 1978-88 (Per cent)
	1978	1988	
Organised Sector	4.79 (15.0)	5.34 (12.1)	1.10
Unorganised	27.21 (85.0)	38.66 (87.9)	3.56
Total Manufacturing Sector	32.00 (100.0)	44.00 (100.0)	3.25

Note :   Figures in parentheses denote percentage shares of the two sub-sectors in total employment of the manufacturing sector.

Source : Draft Eight Five Year Plan (1990-95) and Annual Plan 1991-92. General Profile, Vol.1, Government of Uttar Pradesh, Planning Department, Nov. 1990.

As a matter of fact, the organised sector has witnessed a considerable progress in number of factories, employment, capital invested and value-added

during the period 1971-87, as would be evident from the
Table 4.7 given below.

Table 4.7 : Growth of Registered Factories in U.P.

Period	No. of factories (Number)	Total employ- ment (in'000)	Invested capital (Rs. in crore)	Capital inten- sity (K/L)	Net value added (Rs. in crore)
1971	3399	369	677	1.83	182
1986-87	6634	583	5202	8.92	2730
Per cent in- crease in 1986-87 over 1971	95.18	57.99	668.39	387.43	1400.00

Source : ASI Reports of 1971 and 1986-87.

A close examination of the Table 4.7 suggests that
the number of registered factories and total employment
during the period 1971-87 increased by 95.18 per cent
and 57.99 per cent respectively. Moreover, the invested
capital and value added demonstrated an increase of
668.39 per cent and 1400.00 per cent respectively during
the period. It is further discernible from the table
that capital intensity in terms of invested capital per
employee experienced a considerable increase from 1.83
in 1971 to 8.92 in 1986-87, fetching an increase in its
intensity by 387.43 per cent over the period. Thus, the

increase in value added and invested capital was much higher as compared to number of factories and total employment. This is indicative of the fact that there is not much scope of employment in organised industrial sector of Uttar Pradesh.

4.4(ii) Change in the Patterns of Industrial Production : Resource Based Industries

As already pointed out, initially the industrial base of Uttar Pradesh was not only small but also traditional. However, the economy of the State being agrarian in character offers ample opportunities for the growth and extension of resource based industries. Since the beginning of planning era, drastic and widespread changes have taken place in the composition of the industrial output particularly in resource based industries over the period, as would be evident from the Table 4.8.

According to Table 4.8, agro-based industries dominated the industrial scene with the highest contribution of 43.4 per cent to the total production of resource based industries during 1971-72. The next in importance was the engineering based industries contributing 21.6 per cent followed by the textile based industries (13.1 per cent) and the chemical based industries (13.0 per cent) respectively. However, there was a considerable change in relative positions over the

Table 4.8 : <u>Changes in the Pattern of Industrial Production</u>
<u>Resource-based Industries*</u> <u>During 1971-87</u>

(Rs. in Crore)

Groups	1971-72	1986-87	Growth Rate (1986-87 Over 1971-72)
Agro-based	399 (43.4)	2317 (19.6)	12.4
Textile-based	120 (13.1)	769 (6.5)	13.2
Livestock-based	26 (2.8)	109 (0.9)	10.0
Forest-based	18 (2.0)	15 (0.1)	(-)1.2
Mineral-based	16 (1.7)	1437 (12.2)	35.0
Chemical-based	119 (13.0)	993 (8.4)	15.2
Engineering-based	198 (21.6)	3882 (32.9)	21.9
Miscellaneous-based	22 (2.4)	2290 (19.4)	36.3
Combined	918 (100.0)	2290 (100.0)	6.3

* Registered Under the Factories Act — 1948.

Note : Figures in parentheses denote percentage contribution
to the total production of resource-based industries.

Source: Statistical Diaries of U.P. for 1975 and 1990,
Economics and Statistics Division, State Planning
Institute, Lucknow

period. With the result, in the year 1986-87 the engineering based industries stood at the top with 32.9 per cent share in the total industrial production followed by agro-based industries with much reduced share of 19.6 per cent. This is also supported by the growth performance of these industries over the period; the growth rate of engineering based industries (21.9 per cent) exceeded the growth rate of textile based industries (13.2 per cent) during the period 1972-87. Another noteworthy finding is that the share of mineral based industries in total industrial production of resource based industries increased significantly from 1.7 per cent in 1971-72 to 12.2 per cent in 1986-87. Above all, there seems to be a spurt in growth rate of mineral based industries during the period simply because of its low base, at the initial year (during 1971-72). Thus, so far as the changes in the pattern of industrial production are concerned, we notice that there was a shift in production structure in favour of modern sector industries (mainly engineering based) in place of traditional sector industries (mainly agro-based).

4.4(iii) Changes in Size-based Pattern of Manufacturing Sector

The industrial sector of economy presents a wide-spectrum of various kinds of industries which can be classified into many ways. One such classification is

made on the basis of size of the unit. Many criteria such as amount of invested capital, employment or value added may be employed to measure the size. At the national level, 'invested capital' has been used as the main criterion to define tiny, small ancilliary and large scale units. The definitions based on this criterion have been revised from time to time.[19]

In the Table 4.9, we have tried to study the size-based pattern for large and small scale industries in terms of units, employment, investment and production. As shown in the table the small scale industries have dominated over the large scale industries in terms of both units and employment during the period beginning from the Fifth Plan to the end of the Seventh Plan. On the other hand, in case of output, it is the large scale industries that overshadow the small scale industries. This is because of the well known fact that small scale industries are relatively more labour-intensive as compared to large scale industries. That is why we observe that the former predominates over the latter in respect of employment. Similarly, by virtue of being relatively more capital intensive, the productivity of large scale industries, in general, is far better than that of small scale industries. Hence, in terms of output, the former has surpassed the latter. The contents of the table reveal that there has been an

Table 4.9 : Percentage of Units, Employment, Investment and Production in Large and Small Scale Industries in U.P.

(Percentage to Total)

Plan Period	No. of Units		Estimated Employment		Estimated Investment (Rs.in crore)		Estimated Production (Rs.in crore)	
	Small Scale	Large Scale	Small Scale	Large Scale	Small Scale	Large Scale	Small Scale	Large Scale
First Plan	96.93	3.07	54.50	45.50	6.87	93.13	13.66	86.34
Second Plan	94.13	5.87	36.42	63.58	2.86	97.14	5.94	94.06
Third Plan	94.00	6.00	43.63	56.37	2.67	97.33	5.56	94.44
Annual Plans	94.60	5.40	42.54	57.46	2.97	97.03	6.15	93.85
Fourth Plan	96.60	3.40	42.45	57.55	2.16	97.84	7.88	92.12
Fifth Plan	98.69	1.31	63.87	36.13	9.50	90.50	18.37	81.63
Rolling Plan	98.79	1.21	65.72	34.28	9.98	90.02	19.20	80.80
Sixth Plan	99.38	0.62	73.46	26.54	15.90	84.10	29.98	70.02
Seventh Plan	99.44	0.56	72.78	27.22	11.49	88.51	24.81	75.19

Source : Directorate of Industries, Kanpur.

extension of both the categories over the period. The table further indicates that greater attention has been paid to the growth of small scale industries. As a sequel, its performance that was already good in respect of number of units and employment also improved in respect of output since seventies.

Moreover, it is also said that the level of industrialisation hinges upon the degree of concentration of industrial activities to a large extent. In other words, higher the concerntration of the latter, higher would be the level of the former. In order to examine the scope of this proposition, efforts have been made here to analyse the inter-relationship between these two aspects with the help of the experiences of various economic regions of the State. As shown in Table 4.10, the degree of concentration of industrial activities in terms of both large and small scale units during the year 1988-89 was the highest in the Western region (4.96), whereas the corresponding concentration in respect of the Hill region stood at the lowest (1.68), as against the State average of 3.30.

On the other hand, during the year 1986-87 the level of industrialisation, as measured in terms of the relative positions of the composite indices in different regions, was the highest (84.89) in the Central region

Table 4.10 : Degree of Concentration and the Level of Industrialisation

Regions	Area (100sq. km.) 1981 Census)	Number of Units			Degree of Concentration (Number of Units per 100 sq. km. of area)			Relative Positions based on composite Index of Industria-lisation (1986-87)
		Small Scale (1988)	Large Scale (1989)	Total	Small Scale	Large Scale	Total	
Western	914.80	4061	473	4534	4.44 (148.00)	0.52 (162.50)	4.96 (150.30)	60.66
Central	458.33	1320	210	1530	2.88 (96.00)	0.46 (143.75)	3.34 (101.21)	84.89
Eastern	858.44	2090	140	2230	2.43 (81.00)	0.16 (50.00)	2.60 (78.79)	80.30
Hill	511.25	759	100	859	1.48 (49.33)	0.19 (59.37)	1.68 (50.91)	63.89
Bundel-khand	294.17	537	26	563	1.83 (61.00)	0.09 (28.12)	1.91 (57.88)	30.86
State/ Regions' Total	2944.11	8767	949	9716	3.00	0.32	3.30	100.00

Note : Figures in parentheses denote the relative position of different economic regions from the State average.

Source : Directorate of Industries, Kanpur.

and the lowest (30.86) in the Bundelkhand region against the composite index of 100 at State level.

Regarding the inter-relationship between the two, we notice that the Western and the Central regions qualifying for the higher degree of concentration also qualify for higher level of industrialisation. Besides, the degree of concentration of industrial activities in backward regions of the State is found to be comparatively low. With the result, the level of industrialisation in these regions is also found to be of the lower order. This shows that concentration of industrial activities is, _inter alia_, one of the factors mainly responsible for augmenting the level of industrialisation in different economic regions of the State.

4.4(iv) Pattern Based on Types of Industries

The classification of industries based on the nature of their products can be yet another way of analysing the pattern of manufacturing sector in the State. For this purpose, industries are classified into two : (i) consumer goods industries, and (ii) capital goods industries. The latter are those which produce machinery equipment and tools that are instrumental in producing other goods, while the former are those that serve the final consumption requirement. An exercise relating to such classification is a difficult task. In

view of this, we have taken into account the classification which is already available in literature. The list of different industry groups fallng in these two categories is provided in Appendix IV.5. The capital goods industries due to higher magnitude of capital intensity alongwith greater sophistication and modernisation have greater value-added potential.

It would be evident from the Table 4.11 that the ratios between the consumer goods industries and capital goods industries in respect of number of units and employment were greater than one at each of selected

Table 4.11 : Changes in the Ratios Between Consumer Goods Industries and Capital Goods Industries in U.P. During 1971-86

Item	1971	1980-81	1985-86
No. of Units			
1. Consumer goods industries	1649	2621	3116
2. Capital goods industries	1476	2345	2810
Ratio between 1 and 2	**1.117**	**1.118**	**1.109**
Employment (in'000)			
1. Consumer goods industries	204	416	323
2. Capital goods industries	142	200	226
Ratio between 1 and 2	**1.433**	**2.085**	**1.428**
Value Added (in Rs. Lakh)			
1. Consumer goods industries	8266.44	18969.05	31419.55
2. Capital goods industries	8444.30	19125.93	34968.00
Ratio between 1 and 2	**0.978**	**0.992**	**0.898**

Source : ASI Reports of 1971, 1980-81 and 1986-87.

points of time during the reference period of the study.
Contrary to this, the corresponding ratios in respect of
value added were less than one at each of the selected
points of time. This shows that in respect of value
added capital goods industries have dominated over the
consumer goods industries during whole of the reference
period. Whereas an opposing situation is experienced in
respect of number of units and employment.

Thus, based on the aforesaid findings one may
safely conclude that, by and large, consumer goods
industries are relatively more labour intensive and have
greater potential for employment generation.

4.4(v) Industry-wise Classified Structure of Manufacturing Sector

To better comprehend the pattern, an attempt has
also been made here to analyse the situation by taking
into account the industry group-wise progress made over
the period in the State in respect of number of units,
total employment, invested capital and value-added. The
data/ information concerning these aspects for 19 major
industry groups of the manufacturing sector of the State
at the two points of time are shown in Table 4.12.[20]

It would be evident from Table 4.12 that the
number of food product units during the period 1971 -
1986-87 made a remarkable progress and its rank among
all the industry groups improved from the second to the

Table 4.12 : <u>Changes in Industry Group-wise Percentage Contributions to Total Manufacturing Sector in U.P.: 1971 and 1986-87</u>

(Percentage)

Code No.	Industry Group	1971				1986-87			
		No. of Units	Total Employment	Invested Capital (Cr.Rs.)	Value added (Cr.Rs.)	No. of Units	Total Employment	Invested Capital (Cr.Rs.)	Value added (Cr.Rs.)
20-21	Food Products	13.43 (2)	5.75 (7)	5.49 (6)	6.40 (7)	26.15 (1)	24.27 (1)	15.64 (1)	14.50 (2)
206-7	Sugar, Gur & Khandsari	14.72 (1)	21.95 (1)	20.73 (1)	16.78 (1)	13.87 (2)	20.08 (2)	10.94 (4)	9.76 (5)
22	Beverages & Tobacco	1.17 (16)	1.66 (14)	1.45 (12)	3.06 (11)	0.96 (16)	1.51 (15)	1.46 (13)	4.25 (7)
23	Cotton Textile	3.92 (10)	17.11 (2)	14.22 (4)	12.75 (3)	3.45 (11)	10.52 (3)	5.27 (8)	2.43 (13)
24	Wool, Silk & Synthetic Textile	0.90 (19)	1.99 (12)	1.93 (9)	2.57 (13)	0.74 (18)	2.07 (11)	2.95 (12)	2.51 (12)
25	Jute & Mesta	0.12 (17)	0.03 (19)	0.01 (19)	0.02 (19)	0.24 (19)	0.63 (18)	0.47 (18)	0.58 (18)
26	Textile Products	1.79 (15)	0.92 (17)	0.41 (14)	0.70 (16)	1.47 (14)	0.77 (16)	1.07 (16)	0.75 (17)
27	Wood & Wood Produces	0.83 (18)	0.95 (16)	1.43 (13)	0.48 (17)	0.79 (17)	0.32 (19)	0.22 (19)	0.21 (19)
28	Paper & Paper Products & Printing	7.53 (6)	4.97 (9)	1.82 (10)	3.70 (9)	5.43 (7)	3.33 (9)	3.64 (11)	2.52 (11)
29	Leather & Leather Products	2.19 (13)	1.84 (13)	0.69 (16)	1.73 (14)	1.73 (13)	1.77 (14)	1.04 (17)	1.13 (16)
30	Rubber, Plastic, Petroleum & Coal Products	1.98 (14)	0.71 (18)	0.43 (18)	0.34 (18)	4.23 (10)	1.95 (12)	10.22 (5)	11.35 (3)

Table IV.12 Contd...

Code No.	Industry Group	1971				1986-87			
		No. of Units	Total Employ-ment	Invested Capital (Cr.Rs.)	Value added (Cr.Rs.)	No. of Units	Total Employ-ment	Invested Capital (Cr.Rs.)	Value added (Cr.Rs.)
31	Chemical & Chemical Products	5.49 (8)	6.15 (5)	18.72 (2)	12.91 (4)	6.11 (5)	4.66 (8)	12.79 (2)	4.05 (8)
32	Non-Metallic Mineral Products	6.14 (7)	7.04 (4)	1.57 (11)	3.73 (8)	7.08 (4)	5.11 (6)	3.66 (10)	3.08 (10)
33	Basic Metal & Alloys	10.52 (4)	6.03 (6)	4.04 (7)	7.10 (6)	7.34 (3)	4.85 (7)	7.48 (6)	8.22 (6)
34	Metal Products excluding Machinery & Transport Equipment	12.32 (3)	3.53 (11)	2.56 (8)	2.90 (12)	5.82 (6)	1.92 (13)	1.16 (15)	2.19 (14)
35	Machine & Equipment excluding Electrical Machinery	7.59 (5)	3.62 (10)	1.22 (15)	3.61 (10)	5.31 (8)	2.59 (10)	3.83 (9)	3.72 (9)
36	Electrical Machinery	4.20 (9)	5.33 (8)	16.13 (3)	7.13 (5)	5.24 (9)	6.65 (4)	10.94 (3)	17.22 (1)
37	Transport Equipments including Parts	2.84 (11)	9.40 (3)	6.66 (5)	13.14 (2)	2.77 (12)	6.27 (5)	6.04 (7)	10.27 (4)
38	Other Manufacturing Industries not classified elsewhere	2.32 (12)	1.02 (15)	0.49 (17)	0.95 (15)	1.27 (15)	0.73 (17)	1.18 (14)	1.26 (15)
	Total Manufacturing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note : Figures in parentheses denote the ranks.

Source : Derived from the Appendix IV.6.

first, raising its share from 13.43 per cent to 26.15 per cent in the total manufacturing units of the State. The rank of chemical product units also improved from eighth to fifth. Side by side, the number of non-metallic products also improved from the seventh to the fourth. On the other hand, sugar industry slipped down from the first to the second position. Similar decline in position is noticeable in metal products from the third to the sixth and those of machine and equipment units from the fifth to the eighth.

Regarding the employment, the above table further demonstrates a substantial rise in employment of food products, switching over to the first position from the the Seventh, alongwith a considerable increase in its share from 5.75 per cent to 24.27 per cent in total employment of the manufacturing sector in the State. Some of the other industry groups, that witnessed an appreciable progress are rubber products, electrical machinery and synthetic textiles. The industry groups showing a deterioration in employment over the period are identified as sugar, cotton textiles, wood products, chemical, metal products and transport equipments.

Moreover, the food products in respect of invested capital, which held the sixth position in 1971, occupied the first position during 1986-87 with an increase in its share from 5.49 per cent to 15.64 per cent during this period. In contrast, sugar products, dropping down

to the fourth position from the top, registered a decline in invested capital alongwith cotton textiles and metal products. The remaining industry groups have not demonstrated any significant change.

Thus, the traditional industries such as sugar, textiles and wood seems to have been gradually loosing their grounds to modern industries like electrical machinery, chemicals, rubber, plastic, petroleum and coal products.

Prior to summing up the entire discussion, it would be relevant to further substantiate the progress made in different aspects of the manufacturing sector with the help of the compound growth rates which are shown in Table 4.13. The growth rates of income originating from the secondary sector, as shown in the table, started gaining stability in its performance from the Fourth Plan only. However, the most disappointing feature is that its growth performance remained stagnated around 6 per cent during the previous three decades.

The manufacturing sector as a part of the secondary sector witnessed a much better performance of income growth (9.4 per cent) during the Fifth Plan as compared to 3.4 per cent in the Fourth Plan. Within the manufacturing sector, the growth rates of organised and

Table 4.13 : Annual Compound Growth Rates in U.P.
(In terms of Income)

(Percentage)

Plans/Period	Secondary Sector	Manufactur- ing Sector	Organised Sector	Unorgani- sed Sector
First Plan (1951-56)	1.6	2.3	4.6	1.0
Second Plan (1956-61)	3.2	1.7	2.7	0.9
Third Plan (1961-65)	9.2	5.7	7.5	4.4
Three Annual Plans (1966-69)	(-)3.8	1.2	(-)1.9	3.6
Fourth Plan (1969-74)	6.7	3.4	6.8	0.7
Fifth Plan (1974-79)	7.3	9.4	8.8	9.9
Sixth Plan (1980-85)	6.7	9.0	14.2	5.1
Seventh Plan (1985-90)	5.8	6.4	7.8	5.0
1961-62 to 1970-71	6.1	5.1	6.9	3.6
1971-72 to 1980-81	5.4	5.0	3.2	6.6
1981-82 to 1989-90	6.2	7.6	10.6	5.0

Source : State Income Bulletins Published by the Economics and Statistics Division, State Planning Institute, Lucknow.

unorganised sub-sectors have, also, registered a significant increase in income growth during the Fifth Plan. The income growth of the organised sector during the Sixth Plan outgrew that of the unorganised sector, exhibiting a reversal in the pattern experienced during the Fifth Plan.

However, the tempo gathered in the Fifth Plan could not be maintained during the period of the subsequent plans. The income growth of the manufacturing sector reduced from 9.4 per cent in the Fifth Plan to 9 per cent in the Sixth Plan and experienced a considerable fall (6.4 per cent) during the Seventh Plan. Besides, the dominance of unorganised sector in the Fifth Plan lost its credibility during the subsequent periods/plans owing to much higher income growth performance of the organised sector. Hence, we hardly observe any consistent performance of income growth in the manufacturing sector of the State during the period under review.

However, a decadal analysis of the situation, suggests that the performance of manufacturing sector was much better in the eighties as compared to the sixties and the seventies. A revised policy tuned towards dispersal of industries and conserted efforts on accelerated development of industrially backward areas, seem to have, _inter-alia_, been the crucial factors

responsible for better industrial performance of the State during eighties.

4.5 Conclusion

Some of the conclusions emerging out of the analysis in this chapter are thought provoking and noteworthy. The inter-sectoral pattern of the developed countries suggests that initially the process of development is led by the primary sector. And subsequently, it is the secondary and then the tertiary sector that starts playing its role over the economic scene with its predominance. However, in case of less developed countries (LDCs), the tertiary sector has shown a digression from this general path. It has not only grown simultaneously with the growth of commodity producing sectors but has also demonstrated a much higher contribution to gross domestic product (GDP) during the transitionary phase of development. Almost a similar trend is found to have occurred in the Indian economy in general and the State economy of U.P. in particular.

As a matter of fact, the tertiary sector is quick yielding, requiring light investment and relatively lower degree of technical expertise as compared to the establishment of the modern sector industries. With the result, this sector is expanding at a much faster rate in LDCs characterised by the scarcity of resources, low

per capita income and surplus of labour force. However, being basically a non-commodity producing sector, the income originating from this sector would lead to increased demand of the growing population for food and non-food articles. And persistence of such tendency especially in the short run would result in greater demand exceeding the supply, adding fuel to the fire of inflation. This way, the 'premature tertiarisation' is feared to have a depressing impact on the U.P.'s economy in the long-run.

Another interesting conclusion emerging from the analysis relates to the ratio between consumer goods and capital goods industries. As already advocated by many economists and empirically tested in most of the developed countries, the path of industrialisation was largely influenced by the immediate needs of consumer goods. Hence, to cope up with this demand, priority was accorded to the development of consumer goods industries. This is the reason that in the initial phase of industrialisation, of these countries, the consumer goods industries dominated over the capital goods industries and the ratio between the two was greater than unity. However, in the subsequent phases of industrialisation the ratio declined and went in favour of capital goods industries. Contrary to this, in majority of the developing countries priority was given to development of capital goods industries under

the planned development programme in the initial phase
of industrialisation in order to generate industrial
climate for further development of the industrial
sector. Obviously because of this, the ratio in LDCs
including India was low in the initial phase and showed
some signs of improvement only in the latter phase of
industrialisation.

Furthermore, it is heartening to note that since
1985 onwards, the organised sector has demonstrated
better performance as compared to unorganised sector of
the State, so far as income growth is concerned.
However, in case of number of units and employment, the
unorganised sector still holds supremacy over the
organised sector. This means that to better
industrialise the State, it would be essential to
undertake some concrete measures for productivity
improvements in unorganised sector.

Finally, there has not been any remarkable change
in the sectoral pattern of industrialisation in U.P.,
but a definite shift is noticeable in respect of various
industry groups. There seems to have initiated a trend
favouring more to the development of modern sector
industries such as electronics with a corresponding
decline in the importance of the traditional industries
like sugar and textile over the period.

Notes and References

1. Industrialisation is seen both as a means to reduce dependence on imports and to expand and diversify the export base in most of the countries. See C. Zuvekas, _Economic Development — An Introduction_, The Macmillan Press Ltd., New York, 1979, p.242.

2. This is simple Fisher — Clark Theory of Development. See, A.G.B. Fisher, 'Capital and the Growth of Knowledge', _Economic Journal_, September 1933; and 'Production : Primary, Secondary and Tertiary', _Economic Record_, June 1939; and C. Clark, _The Conditions of Economic Progress_, Macmillan, London, 1940.

3. B.N. Ghosh, 'Development of Tertiary Sector', _Economic and Political Weekly_, February 23, 1991, p.452.

4. _Ibid._, p.452.

5. B.B. Bhattacharya and A. Mitra, 'Excess Growth of Tertiary Sector in Indian Economy : Issues and Implications', _Economic and Political Weekly_, November 3, 1990, p.2449.

6. J. Cody (et.al.), _Policies for Industrial Progress in Developing Countries_, Oxford University Press, Washington, 1980, pp.259-277.

7. P. Streeten, 'The Frontiers of Development Studies : Some Issues of Development Policy', _Journal of Development Studies_, October, 1967, p.12.

8. R.T. Tewari, _Changing Patterns of Development in India_, Ashish Publishing House, New Delhi, 1984, pp.63 and 72.

9. J. Cody (et.al.), _op.cit._, 1980, p.3.

10. _Ibid._, p.4.

11. R.T. Tewari, 'Inter-Regional Patern of Industrialisation in India 1971-1981', in R.T. Tewari and A. Joshi (eds.), _Development and Change in India_, Ashish Publishing House, New Delhi, 1988, p.63.

12. G.K. Shirokov, _Industrialisation of India_, Progress Publishers, Moscow, 1973, Chapter 1.

13. _Ibid._, pp.88-89.

14. J.C. Sandesara, 'Industrial Growth in India -
     Performance and Prospects', The Indian Economic
     Journal, Vol.30, No.2, October-December 1982,
     pp.96-97.

15. A.P. Srinivasamurthy, Investment Allocation in
     Indian Planning, Himalaya Publishing House, Bombay,
     1981, pp.278-279.

16. Ibid., pp.279-280.

17. Government of India, First Five Year Plan, 1951-56,
     Planning Commission, Para 49, p.442.

18. In the present study, manufacturing includes total
     registered industrial sector excluding industry
     groups 40, (electricity), 41 (gas and sanitation),
     42 (water works and supply), 74 (storage and
     warehousing), 91 (sanitary services), and (personal
     services like laundary, cleaning, dying etc.) 96.

19. The criterion based on capital investment to define
     the size of industrial units into small, ancillary
     and large scale was adopted in 1960. This was
     further modified in 1966 to exclude items like land
     and factory buildings from capital investment.
     According to it, the industrial units with capital
     investment of not more than seven and half lakh
     rupees were regarded as small scale units, for
     ancillary the limit was fixed at ten lakh rupees
     while for large scale it was made above ten lakhs
     rupees. In 1974, the limits were raised to ten
     lakhs rupees in the case of small units, fifteen
     lakh rupees in the case of ancillary units and
     above fifteen lakhs in the case of large scale
     units. The present limit (revised in 1985) for
     small scale has been further raised to thirty five
     lakh rupees, for ancillary units it is forty five
     lakh rupees, while for that of large scale it is
     above forty five lakh of rupees.

20. The analysis for the industry group 206 & 207 (i.e.
     sugar, kahndsari and gur) is carried out separately
     in the present study owing to its importance in the
     context of the State economy of Uttar Pradesh.

CHAPTER V

SPATIAL PATTERN OF INDUSTRIALISATION

5.1 Introduction

As stated in the previous chapter, the sectoral
pattern of industrialisation is primarily concerned with
macro processes of industrialisation. Whereas, spatial
pattern of industrialisation is related to the[1]
collective impact of decisions that are taken at the
individual firm level (micro level) in a given space.[1]
Thus, it exposes the behaviour of industrial activities
carried out by the units spread over the space. In this
sense, spatial pattern provides an indepth insight into
the regional dimensions related to the process of
industrialisation. However, in order to demonstrate
overall spectrum of industrialisation, it is necessary
not only to study both the patterns separately but also
to overview them jointly. Moreover, analysis of spatial
aspect of industrialisation is also important because of
the difference in approaches as well as the results
obtained. Therefore, an attempt has been made here to
study the spatial pattern of industrialisation.

The analysis of sectoral pattern being aspatial and
aggregative in character, tends to reveal less and
conceal more. It does not speak anything regarding the
regional contributions of industrialisation to state or

national economy. Owing to this, it becomes difficult to understand as to which regions are making significant contributions and which regions are lagging behind in this regard. Without adequate knowledge of this aspect, it is difficult to determine perspective of industrialisation.

Secondly, as indicated earlier, existing industrial units over the space vary from one to another on account of natural/geographical, socio-economic and political factors. Moreover, these differentials tend to be greater in the cases where the geographical area of the region is relatively large. Uttar Pradesh, the State under review is the largest State of the country in terms of population and stands as the fourth largest State in terms of area. The state has been divided into five economic regions : (i) Western, (ii) Eastern, (iii) Central, (iv) Hill and (v) Bundelkhand, taking into account the aforesaid factors.

Owing to differences in geo-physical conditions and factor endowments, we find differentials in the performance of these regions. Such differentials have a great bearing on the pace and pattern of industrialisation of the State. Therefore, it is deemed imperative here to study these differentials both, at the regional and district levels, in order to chalk-out an appropriate strategy for a speedier process of

industrialisation with active regional participation and co-operation.

Thirdly, one of the cherished goals of our planning, since the very beginning of the First Five Year Plan, has been to secure balanced regional development. The reason being the pre-thought notion that the socio-economic inequalities would have a tendency to grow in the initial and the trasitionary phases of development. The experiences of developed nations also indicate that industrialisation does not take place on uniform pattern in each and every region. This problem gets further aggravated in an under-developed economy with pre-existing inequalities.[2] The case of our country in general and the state of Uttar Pradesh in particular stands as a testimony to this fact. Hence, it becomes all the more necessary to examine and analyse the changes that have taken place in the spatial pattern of industrialisation over the period. This will also help us to understand the extent to which it has been possible to arrest if not reduce the inter-regional disparities.

Against this background, the objective of the present chapter is to investigate into the changes in spatial pattern of industrialisation in U.P. during the period 1971-87. This will enable us to ascertain the movement behaviour of industrial activities at the regional and the district levels during this period. It

would also give an idea about the magnitude of regional disparities that exists in levels of industrialisation. Based on these, it would be possible to evolve some meaningful operational guidelines to be followed up not only for triggering off the process of industrialisation but also suggesting ways and means to reduce the extent of regional disparities.

Thus, our ultimate objective here is to study and analyse the changes that have taken place in the spatial pattern of industrialisation in Uttar Pradesh during the period of 1971-87. For convenience sake, the core of the chapter is divided into four sections. The first section deals with inter-sectoral performance in the regional context and analyses, in detail, the inter-regional differentials in levels of certain selected indicators relating to various aspects of industrialisation.

In the second section, a micro-level analysis of the behaviour of different industry groups on the basis of certain indicators is carried out. Besides, efforts have also been made to demonstrate the spatial pattern of industrialisation with the help of the region-wise ratios between capital goods and consumer goods industries, inter and intra-regional concentration of industrial units and also the relationship between regional development ad industriaisation.

While in the third, assessment and analysis of the levels of industrialisation for different districts is carried out with the help of two distinct approaches, i.e., composite index and normative. Using location quotient and specialisation coefficient, efforts have also been made, in the fourth section, to analyse the extent of inter-regional/inter-district disparities in levels of industrialisation.

5.2(i) Inter-Sectoral Pattern of Industrialisation : A Regional Level Analysis (Section - I)

At the outset, it is worthwhile to mention here that for different economic regions and districts of U.P., estimates of income originating from the tertiary sector are not available at all. In view of this, the subsequent analysis of inter-sectoral pattern of industrialisation at disaggregated level is based on the income originating from the commodity producing sectors (i.e., primary and secondary sectors only). The primary sector is represented by the sub-sectors of agriculture and animal husbandry, whereas the secondary sector is represented by the sub-sector of manufacturing.[3]

In the sequence, it is also considered worthwhile to describe the composition of various economic regions of the State. Uttar Pradesh is one of the larger States of India with an area of 294 thousand sq. kilometers. This is 8.9 per cent of the total area of the country.

Area-wise, after Madhya Pradesh, Rajasthan and Maharashtra, U.P. is the fourth largest State of the country. Population-wise it is the largest State accounting for about 16.5 per cent of the total population (according to 1991 Census) of the country. Based on geo-physical and economic considerations, the State has been divided into five economic regions namely, the Western, the Central, the Eastern, the Hill and the Bundelkhand. The details regarding the composition of these regions are given in Appendix V.1.

The share of the Western region in income originating from agriculture and animal husbandry sector of the State has increased from 41.4 per cent in 1970-71 to 43.3 per cent during the year 1986-87, as would be evident from Table 5.1. Whereas the corresponding shares of the other economic regions have either marginally reduced or have remained almost the constant. The most striking feature noticeable from the above table is that relative regional contributions to the income of agriculture and animal husbandry sector of U.P. have remained almost the same. The contributions of the Western and the Eastern regions were much higher as compared to the other regions of the State.

On the other hand, regarding the regional contributions to manufacturing sector of the State, it is observed that contribution of the Western, the Eastern, and the Central regions were much higher as

Table 5.1 : <u>Sector-wise Regional Contributions to the</u>
<u>State Economy</u>

(Rs. in crore)

Regions	Agriculture and Animal Husbandry			Manufacturing Sector		
	1970-71	1980-81	1986-87	1971	1980-81	1986-87
1. Western	1029.30 (41.4)	1306.98 (43.0)	1522.49 (43.3)	175.38 (46.2)	302.36 (48.7)	640.73 (54.0)
2. Central	421.92 (16.0)	492.14 (16.2)	569.68 (16.2)	75.55 (19.9)	117.60 (18.9)	187.60 (15.8)
3. Eastern	745.70 (30.0)	879.80 (29.6)	1021.20 (29.0)	109.91 (29.0)	161.22 (26.0)	290.96 (24.6)
4. Hill	142.97 (5.8)	176.11 (5.8)	202.72 (5.8)	7.98 (2.1)	19.58 (3.2)	26.37 (2.2)
5. Bundel-khand	146.08 (5.9)	162.95 (5.4)	201.15 (5.7)	10.40 (2.8)	19.82 (3.2)	40.04 (3.4)
State Total	2485.97 (100.0)	3035.98 (100.0)	3517.24 (100.0)	379.25 (100.0)	620.58 (100.0)	1185.70 (100.0)

Note : Figures given in parentheses are percentage
contributions to the total income at the State
level.

Source : District Domestic Net Output, U.P., Commodity
Producing Sectors, Bulletin No.187,214 and 284,
Economics and Statistics Division, State
Planning Institute, U.P., Lucknow.

compared to the Hill and the Bundelkhand regions during the selected points of time. Like agriculture, the relative regional contribution of manufacturing sector, which existed in 1971, did not show any significant change over the period. It is heartening to note that the contribution of the Western region to manufacturing sector of the State significantly increased from 46.2 per cent in 1971 to 54 per cent during 1986-87. However, the most disquieting feature is that excepting Bundelkhand and Western regions, the share of the other three regions of the State (i.e. Eastern, Central and Hill) in total income of the manufacturing sector in the State either reduced or remained almost constant during the period.

A much better performance of the Western and the Bundelkhand regions in this regard is also reflected in percentage increase of income originating from manufacturing sector in these two regions during the reference period, as would be evident from Table 5.2.

In sum, the performance of backward regions in the matter of industrialisation does not seem to have favoured much to achieve the objective of balanced regional development in the State.

Efforts have also been made to analyse the regional contribution to the total organised industrial or manufacturing sector of U.P. during the period of 1971

Table 5.2 : Percentage Increase in Sectoral Income
            During the Reference Period

Regions	Agriculture and Animal Husbandry			Manufacturing Sector		
	1980-81 Over 1971	1986-87 Over 1980-81	1986-87 Over 1971	1980-81 Over 1971	1986-87 Over 1980-81	1986-87 Over 1971
1. Western	27.0	16.5	47.9	72.4	111.9	265.3
2. Central	16.6	15.8	35.0	55.7	59.5	148.3
3. Eastern	20.4	13.7	36.9	46.7	80.5	164.7
4. Hill	23.2	15.1	41.8	145.4	34.7	230.5
5. Bundel-khand	11.5	23.4	37.7	90.6	102.0	285.0
State	22.1	15.9	41.5	63.6	91.1	212.6

Source : Based on the data recorded in Table 5.1.

to 1986-87 in terms of Units, Employment and Value
added (Table 5.3). It would be evident from the table
that over the period of time, the percentage share of
units have increased in case of the Western, the Hill
and the Bundelkhand regions. Whereas, an opposing
situation is experienced in the Central and the Eastern
regions. Moreover, a similar trend is also noticeable
in respect of employment.

Table 5.3 : <u>Regional Variations in Percentage</u>
<u>Shares of Units, Employment and Value</u>
<u>Added in the Total Organised Manufac-</u>
<u>turing Sector of U.P.</u>

(Percentage)

Regions	Number of Units		Total Employment		Value Added	
	1971	1986-87	1971	1986-87	1971	1986-87
Western	57.95	61.75	46.63	50.48	49.04	48.13
Central	22.56	18.92	28.58	23.41	24.57	14.48
Eastern	15.15	12.19	19.59	18.70	23.31	31.97
Hill	3.18	5.64	3.26	5.05	1.96	3.42
Bundel-khand	1.16	1.30	1.94	2.36	1.12	2.00
State	100.00	100.00	100.00	100.00	100.00	100.00
Range	56.79	60.45	44.69	48.12	47.92	46.13

Source : ASI Reports of 1971 and 1986-87.

However, in case of the value added, the percentage share of the Western and the Central regions have demonstrated a decreasing trend, whereas the corresponding share in respect of the remaining Eastern, Hill and Bundelkhand regions have shown a considerable increase. As a result of these changes, the range in respect of both units and employment has increased. However, in respect of value added, the corresponding range has, over the period, shown a marginal decline.

While focussing our attention to the manufacturing
sector it is also considered worthwhile to analyse the
changes in contribution of organised and unorganised
sectors to the total income originating from the
manufacturing sector at the regional and the State
levels during the reference period. In this context, it
would be evident from the Table 5.4 that contribution of
the unorganised sector at the State level dominated over
that of the organised sector at each of the selected
points of time during the reference period.

Moreover, the Eastern and the Bundelkhand regions
also followed the State level path and contribution of
unorganised sector to total income of the manufacturing
sector in these regions was much higher as compared to
the organised sector during the reference period. The
other three regions of the State (i.e., Western, Central
and Hill) exhibited fluctuations over the period so far
as the contributions of these two sub-sectors are
concerned. However, the situation, which finally
emerged during 1986-87, clearly points out that the
contribution of unorganised sector to the total income
of the manufacturing sector was relatively much greater
in almost all the regions of the State excepting the
Western. Based on these findings, one may conclude that
unorganised sector has major say in overall performance
of the manufacturing sector in U.P. In other words, it
is potentially much stronger than the organised sector

Table 5.4 : Region-wise Contribution of Organised and Unorganised Sectors to Total Income of Manufacturing Sector (at 1970-71 Prices)

(Rs. in crore)

Regions	1970-71			1980-81			1986-87		
	Organi-sed	Unorga-nised	Total	Organi-sed	Unorga-nised	Total	Organi-sed	Unorga-nised	Total
Western	83.23 (47.5)	92.15 (52.5)	175.38 (100.0)	128.00 (42.3)	174.36 (57.7)	302.36 (100.0)	334.43 (52.2)	306.30 (47.8)	640.73 (100.0)
Central	45.73 (60.5)	29.82 (39.5)	75.55 (100.0)	61.17 (52.0)	56.43 (48.0)	117.60 (100.0)	88.49 (47.2)	99.11 (52.8)	187.60 (100.0)
Eastern	51.92 (47.2)	57.99 (52.8)	109.91 (100.0)	51.50 (31.9)	109.72 (68.1)	161.22 (100.0)	98.22 (33.8)	192.74 (66.2)	290.96 (100.0)
Hill	3.61 (45.2)	4.37 (54.8)	7.98 (100.0)	11.32 (57.8)	8.26 (42.2)	19.58 (100.0)	11.85 (44.9)	14.52 (55.1)	26.37 (100.0)
Bundel-khand	2.45 (23.5)	7.98 (76.5)	10.43 (100.0)	4.71 (23.8)	15.11 (76.2)	19.82 (100.0)	13.49 (33.7)	26.55 (66.3)	40.04 (100.0)
State	186.94 (49.3)	192.31 (50.7)	379.25 (100.0)	256.70 (41.4)	363.88 (58.6)	620.58 (100.0)	546.48 (46.1)	639.22 (53.9)	1185.70 (100.0)

Note : Figures in parentheses give percentages to respective totals of organised and unorganised sectors.

Source : District Domestic Net Output, U.P., Commodity Producing Sectors – various issues.

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and obviously because of this, its role in accelerated process of industrialisation of U.P. cannot be undermined. In view of this, while determining prioritisation, unorganised sector deserves special attention by the development planners, bureaucrats and politicians.

5.2.(ii) Region-wise Ratios and Growth Rates of Partial Productivity and Capital Intensity

We have also tried to examine the trends in the ratios of partial productivities and capital intensity for whole of the organised industrial sector region-wise at three points of 1971, 1980-81 and 1986-87. Besides, compound growth rates of these ratios have also been worked out to demonstrate the regional performance more clearly during the reference period i.e. 1971-87.

Partial productivity ratios help us to have an idea about the efficient use of a factor input. An increase in these ratios means that over a period of time more output is possible with lesser amount of input. This is indicative of the saving in the use of any particular input in question.[4]

It is heartening to observe that the ratios of the partial productivities and capital intensity have increased in almost all the economic regions of the State during the reference period (i.e. 1971-87).

However, the Eastern region seems to be an exception in this regard. It experienced shortfall in capital productivity from Rs.2.20 in 1971 to Rs.1.42 during 1987. This has happened mainly due to unprecedented increase in capital intensity from Rs.11.6 thousand to Rs.137.7 thousand during this period, as would be evident from the Table 5.5. An observation of Table 5.5 suggests that the nature of additional units set up during the period was more capital intensive and less labour intensive. And obviously because of this, there was not much improvement in capital productivity as compared to labour productivity which showed marked improvement. The growth rates of these ratios further strengthen this inference, as would be evident from the Table 5.6.

Table 5.6 also provides a picture similar to the one obtained from Table 5.5. Over the period of time (i.e. 1971- 1987), the growth of labour productivity experienced a significant rise in all the regions. It was the highest (15.58 per cent) in the Bundelkhand region followed by the Eastern (12.74 per cent) and the Western region (12.02 per cent) as against the State average of 11.69 per cent. Contrary to this, the corresponding growth in the Hill (10.85 per cent) and Central region (10.10 per cent) remained below the State average. However, this growth rate was the lowest in case of the Central region.

Table 5.5 : <u>Region-wise Ratios of Labour Productivity, Capital Productivity and Capital Intensity : Organised Industrial Sector in U.P.</u>

Regions	Ratios								
	Labour Productivity (Rs. in '000)			Capital Productivity (Rupees)			Capital intensity (Rs. in '000)		
	1971	1980-81	1986-87	1971	1980-81	1986-87	1971	1980-81	1986-87
1. Western	28.7	56.3	197.9	1.98	3.96	5.09	14.5	14.2	38.7
2. Central	22.2	37.5	114.0	2.62	0.44	3.43	8.5	84.5	33.3
3. Eastern	25.5	25.5	195.9	2.20	3.32	1.42	11.6	14.0	137.7
4. Hill	25.4	58.5	146.4	1.13	2.11	1.85	22.2	27.8	79.2
5. Bundel-khand	8.1	49.3	94.9	2.09	0.44	2.24	3.9	27.2	42.4
Combined	25.9	48.5	169.7	0.97	1.24	1.53	26.7	39.1	110.7

Source : Based on the data procured from ASI Reports of 1971, 1980-81 and 1986-87.

Table 5.6 : Region-wise Compound Growth Rates of Labour Productivity, Capital Productivity and Capital Intensity : Organised Industrial Sector in U.P.

Regions	Compound Growth Rates								
	Labour Productivity			Capital Productivity			Capital intensity		
	1971-81	1981-87	1971-87	1971-81	1981-87	1971-87	1971-81	1981-87	1971-87
1. Western	6.32	19.67	12.02	6.50	3.65	5.71	-0.19	15.48	5.97
2. Central	4.88	17.21	10.10	-14.97	34.09	1.59	23.22	-12.46	8.36
3. Eastern	0.00	33.81	12.74	3.81	-11.43	-2.54	1.72	38.62	15.67
4. Hill	7.88	14.00	10.85	5.84	-1.86	2.94	2.06	16.13	7.77
5. Bundel-khand	17.84	9.81	15.58	-13.21	26.17	0.14	19.31	6.55	15.07
Combined	5.87	19.59	11.69	2.25	3.05	2.72	3.53	16.02	8.72

$$\text{Compound Growth Rate} = \left[\left(\frac{Y_1}{Y_0} \right)^{1/n} - 1 \right].100.$$

Source : Derived from Table 5.5.

Regarding the growth rate of capital productivity, it is observed that almost all the regions excepting the Eastern (-2.54 per cent) experienced the positive but not very significant growth rates during the reference period. Besides, the State level growth rate of capital productivity was as low as 2.72 per cent.

On the other hand, during the period of study (1971-87), the growth rate of capital intensity is found to be significant both at the State as well as the regional levels. It was the highest in the Eastern region (15.67 per cent) followed by the Bundelkhand (15.07 per cent). The corresponding intensity in the remaining three regions namely the Hill (7.77 per cent), the Central (8.36 per cent), and the Western (5.97 per cent) lagged behind the State level average of 8.72 per cent. It is disappointing to note that the growth rate of capital intensity was the lowest in the relatively more developed Western region.

A considerable increase in the growth rate of capital intensity in backward regions during the period might be because of the establishment of a good number of industrial units based on capital intensive technology. Regarding the relationship between the ratio of labour productivity and capital intensity it is seen that the regions having relatively higher labour productivity also qualify for the high capital intensity, as witnessed by the experiences of the

Bundelkhand region. But the increased capital productivity experienced a dissimilar trend which strongly suggests that increased labour productivity has been an outcome of mainly increased capital intensity. One may further add that the growth rate of capital was much higher as compared to the growth rate of employment in the organised manufacturing sector during the reference period.

On the contrary, in the organised manufacturing sector of the Central, the Hill and the Western regions, a comparatively lower growth rate of capital intensity was accompanied by a positive but not very significant growth rates of both capital and labour productivities. This means that the factor proportions followed in the regions were not appropriate from the point of view of efficient use of factor inputs.

The picture emerging at the State level suggests that the labour productivity increased because of relatively much higher increase in capital intensity. And low capital productivity was experienced because of relatively lower order of employment.

5.3 (i) Inter-Regional Pattern of Industrial Structure (Section - II)

In Uttar Pradesh, the process of industrialisation was started with some traditional agro-based industries

such as sugar, textiles and oil, glass, leather and general engineering.[5] But, the industrial structure has undergone several changes over the period. Therefore, a more detailed structural set up relating to number of factories, employment and value added, at three points of time i.e., 1971, 1980-81 and 1986-87 is shown in Appendices V.2 (A, B and C).

The contents of the appendices clearly demonstrate a welcome change in the structure of industrial sector in the State. The State as a whole has moved from traditional agro-based industries to modern, Mineral, Chemical and Engineering based industries. It is also seen that more recently the State has entered in the fields of electronics. Thus, at present, the structure of industrial sector not only consists of a range of consumption goods but also of intermediate and capital goods. This shows that there is an accumulated potential for product diversification in the State.

At the same time, we also notice that over the period the bulk of industrial activities have concentrated in the Western and the Central regions followed by the Eastern region. Moreover, the Hill and the Bundelkhand regions have continued to be deficient, not being able to contribute significantly to the total industrial output at the State level. Besides, the Western region has enjoyed the top position in respect of industrialisation, while the Bundelkhand region

occupies its position at the bottom. Thus, it seems that the inter-regional pattern of industrialisation has not undergone any significant change during the period since the seventies.

In addition, in the same context, one of the most widely used classification of industries, as indicated in previous chapter, relates to consumer goods and capital goods industries. One of the basic purpose of analysing such ratios (in terms of net value added) here in Table 5.7 is to find out the shifts in them over the period of time across the regions. This would indicate the stage of industrialisation through which the State has been passing. As a matter of fact, the decision regarding the classification of industries into consumer and capital good industries is a difficult task and involves subjectivity. In view of this, the classification used here is based on the criteria already discussed in the previous chapter.

As already noticed in the previous chapter, capital goods industries have dominated the consumer goods industries in terms of contribution to value added at the State level. It is also observed that the ratio between consumer goods and capital goods industries has declined in four out of all the five economic regions of the State during the period 1971-1987. The corresponding ratio has also gone down from 0.98 in 1971

Table 5.7 : Ratio of Value Added Between Consumer Goods
             and Capital Goods Industries in Total
             Organised Industrial Sector of U.P.

Region	Ratio of Value Added Between Consumer Goods and Capital Goods Industries			Percent Increase (+)/Decrease(−) Over the Period 1971-87
	1971	1980-81	1986-87	
Western	0.791	0.842	0.740	− 6.45
Central	1.917	1.877	1.318	−31.25
Eastern	0.774	1.525	0.706	− 8.79
Hill	2.657	0.682	3.848	+44.82
Bundel-khand	0.364	0.043	0.266	−26.92
State*	0.978	0.992	0.898	−8.18

* Note : Based on the data available at the State Level and
         not on the regional totals.

   Source : ASI Reports of 1971, 1980-81 and 1986-87.

to 0.90 in 1986-87 at the State level, amounting to a

decrease of 8.18 per cent. An opposing trend of

increase in this ratio is noticeable only in the Hill

region registering an increase of 44.82 per cent during

this period. This symptom is indicative of the fact

that in this region consumer goods industries have fared

better and have contributed significantly to the rising

share of output and employment in the organised

industrial sector.

5.3(ii) Region-wise Concentration of Additional Units

So far it has been observed that inter-regional pattern of industrialisation has not shown any significant change over the period, although there seems to have set in some forces which could lead to a favourable impact on industrialisation of backward regions. What seems to lie at the root of this slow process of transformation is the clustering of industrial activities in the Western and the Central regions, as would be evident from Table 5.8.

Table 5.8 : Region-wise Percentage Share in Total Additional Units of Organised Industrial Sector in U.P.

(Percentage)

Region	Additional Number of Units Established Upto		
	1980-81 Over 1971	1986-87 Over 1980-81	1986-87 Over 1971
1. Western	72.60	57.89	65.95
2. Central	16.62	13.33	15.13
3. Eastern	6.23	12.86	9.23
4. Hill	4.16	13.20	8.24
5. Bundelkhand	0.39	2.72	1.45
State Region Total	100.00	100.00	100.00
Range	72.21	55.17	64.50

Source : ASI Reports of 1971, 1980-81 and 1986-87.

The above table shows that out of the total number of additional units established in the State upto 1986-87 over the base year 1971, more than 80 per cent were established in the Western and the Central regions only. In other words, hardly 20 per cent of the total additional units could be set up in the backward regions of the Eastern, the Hill and the Bundelkhand. Due to this bias, the contributions of employment and value added also followed almost the similar trend. However, as shown in Table 5.8, the range of additional units located in different regions reduced from 72.2 per cent in 1980-81 over 1971 to 55.2 per cent during 1986-87 over 1980-81. Based on this, one may conclude that enforcement of revised policies might have inter-alia gone in favour of backward regions, resulting in reduction of the regional disparities in number of industrial additional units to some extent.

In addition to the inter-regional variations analysed in the aforesaid paragraphs, the lopsidedness in extension of industrial units and their concentration at few districts within a region over the period has resulted in agglomerated pattern of industrialisation in Uttar Pradesh. Table 5.9 clearly brings out the case of clustering of industries in a few districts of a region.

Table 5.9 : Intra-Regional Concentration of Industrial
Units of Organised Sector in U.P.

Region/District	1971		1986-87	
	No. of Factories	Percentage to Regional Total	No. of Factories	Percentage to Regional Total
0	1	2	3	4
1. Western (18)	1986	100.00	4130	100.00
Agra	399	20.09	526	12.73
Meerut*	489	24.62	1414	34.24
Muzaffarnagar	215	10.83	360	8.72
Muradabad	96	4.83	322	7.80
Combined	1199	60.37	2622	63.49
2. Central (9)	773	100.00	1265	100.00
Kanpur	489	63.26	662	52.33
Lucknow	187	24.19	284	22.45
Combined	676	87.45	946	74.78
3. Eastern (15)	519	100.00	815	100.00
Varanasi	168	32.37	241	29.57
Allahabad	145	27.94	186	22.82
Gorakhpur	62	11.94	105	12.89
Combined	375	72.25	532	65.28

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Table 5.9 (Contd.)

0	1	2	3	4
4. <u>Hill</u> (8)	<u>109</u>	<u>100.00</u>	<u>377</u>	<u>100.00</u>
Dehradun	61	55.96	99	26.26
Nainital	36	33.03	249	66.05
Combined	97	88.99	348	92.31
5. <u>Bundelkhand</u> (5)	<u>40</u>	<u>100.00</u>	<u>87</u>	<u>100.00</u>
Jhansi	31	77.50	61	70.11

*Includes Ghaziabad also. Figures in parentheses denote the
total number of districts.

Source : ASI Reports of 1971 and 1986-87.

In the Western region, out of the total eighteen
districts, only four districts viz., Agra, Meerut
(including Ghaziabad), Muzaffarnagar and Moradabad
claimed to have established approximately 63.5 per cent
of the total units during 1986-87. Similarly, out of
the total nine districts of the Central region, only two
districts (Kanpur and Lucknow) made up as much as 74.8
per cent during the same year. Moreover, in the Eastern
and the Hill regions, out of the total fifteen and eight
districts only three and two accounted for about 65.3

per cent and 92.3 per cent respectively during 1986-87.
To name these districts they are Varanasi, Allahabad,
Gorakhpur at the Eastern region and Dehra Dun and
Nainital of the Hill. The most surprising is the case of
the Bundelkhand region where out of the total five
districts, Jhansi alone captured about 70.1 per cent of
the total units in the region during the year 1986-87.

The above analysis of the inter-regional and intra-
regional variations amply demonstrates that agglomerated
spatial pattern of industrialisation has emerged in the
State over the period. This is indicative of the fact
that greater attention is needed to be given to the
dispersal of industrial units at the micro-level. For
this purpose, we have to seek maximum possible co-
operation from the local people on one side, and ensure
adequacy of infrastructural network at the micro-level
for fuller exploitation of natural and human resources
and capital on the other.

5.4 Relationship Between Inter-Regional Industrialisation and Development

Theoretically, it is hypothesised that there is a
direct positive relationship between level of
industrialisation and the level of regional development.
To test this hypothesis in the context of U.P.'s
economy, efforts have been made here to assess and
analyse the movement behaviour and relative performance

of industrialisation (in terms of contribution of
manufacturing sector to total net domestic product) for
economic regions and whole of the State during the
period 1971-87. Moreover, to relate the level of
industrialisation with regional development, efforts
have also been made to assess and analyse the
contribution of various economic regions to total net
domestic product of the State during the period under
consideration, as would be evident from Table 5.10.

It would be evident from the Table 5.10 that there
was a considerable increase in contribution of the
organised manufacturing sector to total NDP both at the
regional and the State levels during the period 1971-87.
Besides, there was the highest increase (265.34 per
cent) in the Western region and the lowest increase
(146.53 per cent) in the Eastern region, as against the
State average increase of 212.64 per cent.

It is, however, disheartening to note that the
pattern of regional contribution of the manufacturing
sector to total NDP of the State, which was experienced
in 1970-71, continued to remain almost the same during
1986-87. There was a minor change in the hierarchical
order of the Western and the Central regions; in 1971
the Central region stood at the first, while the Western
region occupied the second position but the order of
ranking between the two reversed during 1986-87.

Table 5.10 : <u>Net Domestic Product Originating from Commodity</u>
<u>Producing Sector (at 1970-71 Prices)</u>

(Rs. in crore)

Region	Regional Contribution to NDP of the State		Percent Increase in 1986-87 Over 1970-71	Contribution of organised Manufacturing Sector to Total NDP		Percent Increase in 1986-87 Over 1970-71
	1970-71	1986-87		1970-71	1986-87	
1. Western	1213.44 (41.2)	2184.91 (45.3)	80.06	175.38 (14.5)	640.73 (29.3)	265.34
2. Central	506.24 (17.2)	764.25 (15.9)	50.97	75.55 (14.9)	187.60 (24.5)	148.31
3. Eastern	871.15 (29.6)	1342.20 (27.9)	54.07	109.91 (12.6)	270.96 (21.7)	146.53
4. Hill	193.84 (6.6)	273.29 (5.7)	40.99	7.98 (4.1)	26.37 (9.6)	230.45
5. Bundel-khand	159.36 (5.4)	252.51 (5.2)	58.45	10.43 (6.5)	40.04 (15.9)	283.89
Combined	2944.03 (100.0)	4817.16 (100.0)	63.62	379.25 (100.0)	1185.70 (100.0)	212.64

Source : District Domestic Net Output, U.P., Commodity
Producing Sector, Bulletin No.187 and 284,
Economics and Statistics Division, State Planning
Institute, U.P., Lucknow.

On the other hand, in regard to original contribution we observe that excepting the Western region the contribution of almost all the economic regions to total NDP of the State decreased during the period from 1970-71 to 1986-87. Besides, the hierarchical order of the relative contributions of different economic regions, which existed in 1971, continued to persist even during the year 1986-87. In other words, there was no change in the hierarchical order of different economic regions during the reference period so far as regional contribution to total NDP of the State is concerned. These findings help us to conclude that as a result of significant improvements in levels of industrialisation of different economic regions there have been an increase in total NDP of different regions. But the influence of the former seems to have not been so much powerful which could fetch efficacy in augmenting the level of overall development. However, judging from the angle of the percentage increase, we notice that both the level of industrialisation and the level of development have shown marked improvements in different economic regions of the State. Hence, the hypothesis under consideration seems to be justifiable to a large extent. It is, however, difficult to conclude precisely that both of them have moved together with the same pace.

5.5 Changes in Inter-Spatial Pattern of Industrialisation (Section - III)

It has already been recognised through the analysis of previous sections that the State of Uttar Pradesh is tormented by both the inter-regional and intra-regional disparities. This fact necessitates a thorough probing into the inter-spatial pattern of industrialisation that has emerged at the micro-level in the State. The efforts have, therefore, been made here to measure the levels of industrialisation for different districts of the State at the selected points of 1971, 1980-81 and 1986-87. The two basic approaches of (i) composite index, and (ii) normative have been followed for this purpose.

5.5(i) Composite Index Approach

As a matter of fact, industrialisation because of being a complex phenomenon cannot be measured through use of any single indicator. Therefore, industrialisation in the present context is measured by the composite index based on the total vector of the six indicators relating to mainly performance, concentration, technology and input use. These consist of :

(i) number of factories per 100 sq.km. of area;

(ii) number of factories per lakh of population;

(iii) gross value of industrial produce per lakh of population;

(iv) industrial workers engaged per 100 sq.km. of
     area;

 (v) value added by manufacture per industrial
     worker; and

(vi) fixed capital employed per industrial worker.

The index method is used to construct the composite
indices of industrialisation for different districts.
Besides, the regional disparities in levels of
industrialisation are also estimated, using the
unweighted coefficient of variation.

Moreover, it is worthwhile to add here that
composite indices, thus, constructed for different
districts do not carry any normative judgement. Nor do
they suggest any optimal pattern of industrialisation.
However, this approach is followed to determine the
hierarchical order of districts in levels of
industrialisation with a view to analysing the shifts in
their relative positions over the period. The composite
indices of different districts including their rank and
the unweighted coefficient of variation are placed in
Appendix V.3.

It would be evident from the Table 5.11 that
according to composite indices of industrialisation, the
number of districts falling in the Industrialised
Category increased from five in 1971 to seven during
1986-87. Moreover, the number of districts in the Semi-

Industrialised Category, which was eight in number in 1971, remained the same during 1986-87. Besides, the number of districts constituting the Non-Industrialised Category reduced from 35 in 1971 to 33 in 1986-87.

Table 5.11 : Inter-Spatial Pattern of Industria-
lisation : Composite Index Approach

Categories	Number of Districts		
	1971	1980-81	1986-87
Industrialised	5[*]	7	7
Semi-Industrialised	8	7	8
Non-Industrialised	35	34	33
Total	48	48	48

* This also includes Ghaziabad as one separate unit. The necessary data of Ghaziabad for the year 1971 were not available. It is, therefore, assumed that the industrial status of Ghaziabad in 1971 was equivalent to what was enjoyed by Meerut.

Source : Derived from Appendix V.3.

Moreover, in order to better understand the emerging situation, efforts have also been made to analyse the inter-category movements of different districts in terms of their levels of industrialisation through the Chart 5.12 available on next page.

Table 5.12 : <u>Inter-Category Movements of Districts According to Composite Indices of Industrialisation</u>

	1986-87			
Categories based on composite indices of Industria-lisation	Industrialised (Above 200)	Semi-Industrialised (100-200)	Non-Industrialised (Below 100)	Total
Industria-lised (Above 200)	Agra*, Meerut*, Lucknow*, Kanpur*, Ghaziabad*			5
Semi-Industria-lised (100-200)		Muzaffarnagar* Saharanpur* Varanasi* Dehra Dun* Bijnor* Allahabad*	Aligarh** Bareilly**	8
Non-Industria-lised (Below 100)	Mirzapur*** Mathura***	Nainital*** Moradabad***	Bulandshahr* Rampur* Shahjahanpur* Mainpuri* Etawah* Farukhabad* Badaun* Etah* Pilibhit* Gorakhpur* Deoria* Ghazipur* Azamgarh* Ballia* Bahraich* Basti* Faizabad* Jaunpur* Pratapgarh* Sultanpur* Gonda* Fatehpur* Kheri* Barabanki* Sitapur* Hardoi* Unnao* Jhansi* Banda* Almora* Garhwal*	35
Total	7	8	33	48

(Left margin label: 1971)

Note   :   * no change in position
                   ** downward movement
                  *** upward movement

Source :   Based on the composite indices of industrialisation as given in Appendix V.3.

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It would be evident from the Chart 5.12 that there
are, in all, four districts namely, Mirzapur, Mathura,
Nainital and Moradabad showing movements to higher
categories of industrialisation during the reference
period. Contrary to this, there are only two districts
(Aligarh and Bareilly) which have experienced movements
to downward categories from their earlier position
during the period. It is also seen that the number of
districts, which have not shown any inter-category
movements in their levels of industrialisation, is as
high as 42 out of the total 48 districts under
consideration. Based on these findings, one can aptly
remark that, no doubt, there has been some improvement
in the process of industrialisation at the micro-level.
But considering the status-quo position of the 42
districts during this period, it may be concluded that
the inter-regional pattern of industrialisation, which
existed in 1971, has not shown any meaningful change
over the period. However, one more interesting finding
is regarding the intra-regional disparities among
different districts. A decline, though small in
magnitude, in the coefficient of variation from 1.29 in
1971 to 1.15 in 1986-87 suggests that intra-regional
disparities in levels of industrialisation have shown a
marginal tendency of convergence during the period of
the study (see Appendix V.3).

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5.5(ii) Normative Approach

Alternatively, we have also made use of normative approach for analysing the inter-regional pattern of industrialisation in absolute terms. As already quoted in the work, R.B. Sutcliffe has provided three criteria based on income and employment to assess the level of industrialisation.[6] However, owing to paucity of adequate data at the district level, it has not been possible to use them as such. Therefore, we have applied the following criteria in the present case.

(i) at least 10 per cent contribution of manufacturing sector to total State income; and

(ii) at least 10 per cent contribution of industrial sector to the total workforce at the State level.

The results based on the aforesaid two criteria are placed in Appendix VI.4 and its condensed form is presented below :

Table 5.13 : Inter-Spatial Pattern of Industrialisation : Normative Approach

Category	Number of Districts		
	1970-71	1980-81	1986-87
Industrialised	5	9	8
Semi-Industrialised	14	18	26
Non-Industrialised	29	21	14
Total	48	48	48

Source : Derived from Appendix V.4.

As shown in Table 5.13, all the 48 districts under consideration have been divided into the three categories of Industrialised, Semi-industrialised and Non-industrialised, depending upon their contribution to income and employment. The districts satisfying both the criteria have been designated as Industrialised because these districts have contributed significantly to industrialisation in terms of both income and employment. The above table clearly shows that over the period of time the number of districts falling in the industrialised category has increased from 5 in 1971 to 8 during 1986-87.

Moreover, the districts which have qualified for only one criterion are placed in the semi-industrialised category. The number of such districts as shown above has increased from 14 in 1971 to 18 in 1980-81 and to 26 during 1986-87. The majority of districts joining this category in 1980-81 and 1986-87 have experienced an upward movement from Non-industrialised category. One of the striking point here is that majority of the districts constituting this category has satisfied only income criterion at the selected points of time. Of these, there are a few districts (Lucknow and Dehradun in 1971, and only Nainital in 1980-81) that satisfy only the employment criterion. This indicates that during the reference period industrialisation has gone more in favour of augmenting the level of income rather than employment.

Besides, the number of districts, which could not satisfy either of the criterion, are placed in the Non-industrialised Category. It would be evident from the above table that the number of such districts have significantly reduced from 29 in 1971 to 14 in 1986-87. The reduction in number of such districts over the period is an outcome of an upward movement of some of the districts from Non-industrialised category to Semi-industrialised category. This is indicative of the fact that the level of industrialisation in these districts is extremely poor. It would, therefore, be worthwhile to conduct a separate study so as to identify the factors which are mainly responsible for the low level of industrialisation in these districts.

5.5(iii) Comparability of the Results Based on the Two Different Approaches

According to composite indices of industrialisation, there are, in all, seven districts that are designated as Industrialised, namely, Agra, Mathura, Meerut, Lucknow, Mirzapur, Ghaziabad, and Kanpur, while there are 8 districts that are deemed as Industrialised according to Normative Approach. These can be named as Agra, Saharanpur, Bijnor, Ghaziabad, Kanpur, Lucknow, Nainital, and Dehradun. Out of these two sets of districts we notice that in the Industrialised category there are four districts (Agra, Lucknow, Kanpur and

Ghaziabad) that are found to be common in the two approaches. In addition, there are three more districts that are found to be industrialised according to composite index approach, while there are another four such districts industrialised according to the normative approach.

This way, considering the results of both the approaches meaningful and reliable, we find that the number of districts industrialised in the State are eleven only and the remaining lot of 37 districts are still industrially backward.

Besides, the eight districts that are not considered so far in the present section mainly due to paucity of relevant data, are also deemed to fall in the category of industrially backward. These include four districts of the Hill region namely, Pithoragarh, Tehri Garhwal, Chamoli and Uttar Kashi; three districts of the Bundelkhand namely, Hamirpur, Jalaun and Lalitpur and one district of the Central region namely, Rae-Bareli. This has been done on the plea that they are found to be backward in respect of their socio-economic performance also.

Thus, based on the whole exercise, we arrive at the conclusion that there were, in all, 45 industrially backward districts out of the total 56 districts in the State during 1986-87.

However, in juxtaposition, we notice that there were, in all, 42 districts identified as industrially backward by the Government of India (Appendix V.5). Comparing our list of the industrially backward districts (Appendix V.6) with that of the Government of India, we further notice that there are thirty eight districts common in both the lists. Besides, the three districts namely Dehra Dun, Nainital and Mathura, which appear in the Government list, do not figure in our list of industrially backward districts. Contrary to this, there are seven districts namely Muzaffarnagar, Varanasi, Allahabad, Aligarh, Bareilly, Gorakhpur and Kheri which apear in our list but are non-existent in the list of industrially backward districts of the Government. Accepting the reliability of the number of industrially backward districts appearing in either of the list, one can finally reach the conclusion that there are, in all, forty eight industrially backward districts in U.P. Since the number of such districts are in majority, one can further conclude that the whole of the State is industrially backward.

5.6 Inter-District Pattern of Specialisation in Industrial Activities (Section - IV)

5.6(i)   The specialisation of districts in industrial activities has been worked out with the help of coefficient of specialisation for each district at two

points of time i.e., 1971 and 1986-87. The coefficient
of specialisation can be defined as follows :

$$S_j = \sum_{i=1}^{n} \left| \frac{e_{ij}}{E_j} - \frac{E_i}{E} \right|$$

(The two vertical lines indicate absolute values
ignoring positive or negative signs).

Where,

e_{ij} = employment in i^{th} industry in j^{th} district.

E_j = employment in all industries in j^{th} district.

E_i = employment in i^{th} industry in the State.

E = employment in all industries in the State.

The coefficient of specialisation is a measure to
work out the degree/extent to which the economy of a
district is specialised in a given framework of total
industrial activities. Specialisation, in this context,
is deemed to mean that the district economy under review
has a mix of industry in terms of employment which
differs from that of the State of which it forms a part.
A district with an industrial mix exactly matching with
the State would have a zero value of the coefficient.
The greater than zero the value of the coefficient (the
greater would be the extent to which the district's
industrial structure would show divergence from that of
the State average) the greater would be the divergence
between district and State industrial structure. It
thereby, implies that the district's industrial

activities are concentrated (or 'specialised') in either one or few industries.[7]

A diversified pattern is preferred to a concentrated pattern because by virtue of a range of industry groups there arises a set of backward and forward linkages that directly or indirectly assist in building better industrial climate. It thereby provides better potential for industrial development as compared to a pattern with narrow base and restricted scope for such linkages.[8] The computed coefficients of specialisation for different districts of the State for the years 1971 and 1986-87 are given in Table 5.14.

It is discernible from the Table 5.14 that a majority of districts in Uttar Pradesh had concentrated pattern of industrial structure rather than the diversified structure in 1971. The Western region was having the most diversified industrial structure as thirteen out of eighteen districts in the region had coefficient of specialisation less than 0.5. In the Central region, only three districts out of the total nine had this coefficient less than 0.5. Whereas in case of the Eastern and the Hill regions, out of the total fifteen and six districts, only four and two had the value of coefficient less than 0.5 respectively. The degree of concentration appeared to be the highest in the Bundelkhand region where almost all the districts excepting Jhansi had this coefficient greater than 0.5.

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Table 5.14 : Degree of Industrial Diversification/
Specialisation of Districts

Districts/Regions	Coefficients of Specialisation	
	1971	1986-87
1	2	3

Western Region

1. Agra	.2052	.3134
2. Mainpuri	.5605	.5741
3. Aligarh	.0560	.1087
4. Bareilly	.3536	.3236
5. Badaun	.4766	.4828
6. Bulandshahr	.3520	.1682
7. Etah	.6101	.6449
8. Etawah	.6101	.6304
9. Farukhabad	.4384	.4405
10. Mathura	.1810	.2198
11. Meerut*	.0190	.2672
12. Moradabad	.3468	.2968
13. Pilibhit	.6101	.4447
14. Rampur	.6154	.4132
15. Muzzafanagar	.3742	.1892
16. Saharanpur	.2804	.1266
17. Bijnor	.4439	.2521
18. Shahjahanpur	.4175	.3236

Central Region

19. Barabanki	—	.6423
20. Fatehpur	.6101	.6632
21. Hardoi	—	.7013
22. Kanpur	.2177	.2269
23. Kheri	.5216	.4447
24. Lucknow	.3810	.3278
25. Rae Bareli	—	.5464
26. Sitapur	.1225	.0678
27. Unnao	.6101	.5371

Contd.../-

Table 5.14 (Contd...)

1	2	3
Eastern Region		
28. Allahabad	.3822	.1346
29. Azamgarh	.5121	.5337
30. Ballia	--	.7013
31. Bahraich	.5887	.6632
32. Basti	.3459	.6823
33. Deoria	.4766	.5151
34. Faizabad	.6428	.5999
35. Ghazipur	--	.7013
36. Gonda	.4439	.4447
37. Gorakhpur	.3085	.1536
38. Jaunpur	.6428	.6352
39. Mirzapur	.5880	.6016
40. Pratapgarh	--	.7013
41. Sultanpur	--	.7013
42. Varanasi	.3919	.4358
Hill Region		
43. Almora	.6428	.6589
44. Dehradun	.2034	.4427
45. Nainital	.4958	.1906
46. Pauri Garhwal	.9673	.6632
47. Tehri Garhwal	--	.7013
48. Pithoragarh	--	.7013
Bundelkhand Region		
49. Banda	.6101	.6632
50. Hamirpur	--	.6308
51. Jalaun	--	.7013
52. Jhansi	.5306	.4701

* Meerut includes Ghaziabad also.

Source : Based on the data of ASI Reports of 1971 and
          1986-87.

However, a minute observation of the table suggests that the extent of diversification has increased in some districts and at the same time it has also decreased in some other districts during 1986-87.

Over the period in 1986-87, increased diversification is noticed in Rampur and Pilibhit districts of the Western region along with those of Kheri and Unnao in the Central region. By and large, whole of the Eastern region has experienced increased concentration, whereas Pauri Garhwal of the Hill region has shown some signs of diversification. In the Bundelkhand region Jhansi, with the value of coefficient less than 0.5 has also shown signs of increased diversification. It is also observed that some of the districts in the State have become less diversified over the period. Some of the examples of such districts, as identified in the present case, include Meerut, Mathura, Farukhabad, Agra and Badaun of the Western region; Varanasi and Mirzapur of the Eastern region; and Dehradun of the Hill region.

Based on these discussions, it is very difficult to generalise the results precisely. However, on the whole, we notice that the Western region has the most diversified structure of industrial activities, whereas the least diversified structure is noticeable in the case of Bundelkhand region. Thus, the extent of

diversification in the case of industrial activities in
these two regions remained more or less the same during
the period of the study. The other regions of the State
have experienced a mixed-kind of situation; within the
region some of the districts are found to be the least
diversified and some others are identified as the most
diversified.

5.6(ii) Inter-District Differentials in Location of Industrial Activities

The analysis of inter-district differentials in
concentration/diversification of industrial activities
in a given spatial unit ensures linkages and promotes
industrial development. However, this proposition may
not be always useful. For programme implementation
especially in a backward region, it would be appropriate
to begin with those industries having higher than
average weightage in that particular region.[9] The bias
in the form of weightage might be due to some locational
advantages that can be further exploited to accelerate
region's industrial development not only in
comparatively shorter span of time but also in the face
of problems like resource constraints and inter-regional
as well as intra-regional imbalances. Thus, this
approach substantiates the fact that an attempt to
diversify all types of industries may not be always
meaningful. Therefore, under such circumstances an

adoption of selective stand would yield better/desirable results.

Besides, it would also be difficult to trace and locate all types of industries even in the so-called diversified regions. Therefore, it is felt that there is a need to work out industrial base for different spatial units/districts, so that required efforts in proper direction could be intensified. Against this background, in the present section an attempt is made to work out industrial base for different districts of the State for the year 1986-87.

Industrial base can be defined in terms of the industry in which a district specialises and has a more than proportionate share of employment. It is calculated with the help of location quotient, which is defined here as under :

$$I_{ij} = \frac{e_{ij}}{E_j} \Big/ \frac{E_i}{E}$$

(the symbols used in this formula denote the same meaning as specified in case of coefficient of speciali-sation).

This is a statistical measure to spell out the extent to which an industrial activity is relatively under or over represented in a given region/district, as compared to the State. The district for which the quotient is found to be equal to one, implies that the particular industry of that district has equal representation in the State economy.

When the quotient exceeds one, it indicates that as compared to the State the district has specialised in that particular industry.[10] The location quotients for individual industrial groups of different districts as estimated in the present case are provided in Appendix V.7. The Appendix shows that, by and large, the developed districts have comparatively greater number of industrial groups forming the industrial base.

Whereas, the backward districts have a small range of industrial groups forming the industrial base. Besides, the appendix also enlightens us regarding the availability of district-wise potential for industrial development. This can facilitate the development planners to a great deal in designing the right path to achieve the goal of the balanced regional development in the State.

5.7 Conclusion

The main conclusions emerging out of the analysis in this chapter are as follows:

The relative regional contributions to the income originating from the Primary sector at the State level have remained almost the same during 1971-87. Similarly, excepting the Western and the Bundelkhand regions, the shares of the remaining three regions in the total income of the State level industrial sector

have either marginally reduced or remained constant during the reference period. Thus, it appears that the performance of the industrial sector of the backward regions has not made any significant contribution to balanced regional development of the State.

Regarding the regional performance of the organised industrial sector, there seems to have been some perceptible changes over the period, in terms of number of units, total employment and value added. The range in respect of value added has marginally declined, whereas the corresponding range in respect of number of units and total employment has gone up. Interpretation of these findings suggests that the gap between the backward and the forward regions is still of alarming nature. The Western region enjoys the first position, while the Bundelkhand region stands at the bottom in terms of all the three aforesaid variables. The contribution of the unorganised sector to the total income of the manufacturing sector was relatively much higher as compared to the organised sector in all the regions (excepting the Western region) during the reference period. This is indicative of the fact that the role of the former in the process of industrialisation cannot be undermined. In other words, the development of unorganised sector seems to be <u>sine-qua-non</u> for accelerated process and progress of industrialisation in the State.

The partial productivity ratios suggest that the pace of labour productivity was much higher as compared to that of the capital productivity inspite of the marked increase in the capital intensity during the reference period. This is mainly because of the two-fold reasons : first, additional installed capacity resulting from increased capital intensity might have not been fully utilised. Second, the rate of absorption of labour force in the organised manufacturing sector might have been extremely low and not commensurate with the growth of capital intensity.

The income originating from manufacturing sector in different regions of the State during the period has increased at a much higher rate as compared to the corresponding increase in net domestic output. It deciphers from the differentials in the percentage increase that both the level of industrialisation and the level of overall development have shown marked improvements but the contribution of the former does not seem to be effective in augmenting the desired level of development. Moreover, in regard to regional contribution, the hierarchical order, that we noticed in respect of both industrialisation and development during 1971, continued to remain almost the same during the year 1986-87 also.

The exercises based on Composite Index and Normative approaches have suggested that out of the total 56 districts in the State, the number of industrially backward districts, as identified in the present study, is as high as 45. However, comparing this list of identified industrially backward districts with that of the Government of India, we finally arrive at the conclusion that there are, in all, 48 industrially backward districts in the State. This provides a sufficient ground to further generalise that the whole of the State is industrially backward.

The study has also come out with the finding that there exists both inter-regional and intra-regional variations in levels of industrialisation to a considerable extent. In respect of the former, it is observed that more than 80 per cent of the total additional units during the period of the study, were established in forward regions (Western and Central) and hardly 20 per cent of the total could be set up in the backward regions. Moreover, the disparities are also pronounced in case of the latter leading to agglomerated pattern of industrialisation. This has happened mainly because of lopsidedness in extension of industrial units and their concentration at a few districts of a region. Therefore, the persisting tendency of inter and intra-regional disparities calls for greater attention that

has to be paid for dispersal of industrial units at the micro-level.

It is clear from the coefficient of specialisation for different districts that the Western region is having the most diversified structure of industrial activities, whereas, the Bundelkhand region qualifies for the least diversified structure. Moreover, the other regions of the State are representative of a mixed scenario of industrial activities; within the region some districts qualify for the most diversified structure and some others witness the narrow structure. As a matter of fact, the most diversified structure of industries promises for better inter-industry linkages, whereas the reverse is true in case of the least diversified structure. This way, one can draw an inference that the Western region because of being most diversified has greater inter-industry linkages and hence better scope for the expansion of industries. Contrary to this, the Bundelkhand region because of being least diversified qualifies for lower inter-industry linkages and hence possesses relatively less potential for industrial development. Besides, based on the experiences of other regions, there seems to exist inter-industry differences in the level of diversification as well as inter-industry linkages. In view of this, a micro-level planning is deemed to be a sine-qua-non for overall industrialisation of the State.

Analysis based on the district-wise location quotient of different industry-groups carried out in this chapter suggests that developed districts are having relatively larger number of industry groups and qualify for strong industrial base. Whereas, the backward districts have a smaller number of industry groups and also qualify for low industrial base.

Truly speaking, the strong industrial base is an added advantage of a district for gearing up the process of industrialisation. Therefore, in any strategy of industrial development, planning for strengthening the industrial base deserves utmost priority at the micro level.

Notes and References

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3. The figures for the organised manufacturing at the State level in this chapter differ from those in the previous chapter. The figure in this chapter are arrived at by simply aggregating data of total manufacturing sectors in all the five economic regions. This difference is due to the ASI practice of not publishing data of an industry-group unless there are atleast three factories in it in a given district to avoid identification. In other words, the aggregated data of the regional level is not as much exhaustive as is found at the State level.

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CHAPTER VI

FACTORS CONTRIBUTING TO INDUSTRIALISATION :
A MICRO-LEVEL ANALYSIS

6.1 Introduction

One of the crucial findings, as discussed in the
previous chapter, has been that a majority of districts
and for that matter the whole of Uttar Pradesh is one of
the industrially backward State of the country.
Considering industrialisation as synonymous with
development, it can be further deduced that Uttar
Pradesh is suffering from the general backwardness.   It
is, therefore, deemed imperative in this chapter to
probe into and analyse the factors responsible for the
level of industrialisation in the State against the
backdrop of the governmental efforts made so far.

For analysing the aforesaid task in sequential
manner, the present chapter is divided into three main
sections.   The first section attempts to recapitulate,
in brief, the efforts made by the Government in the past
to overcome the problem of industrial backwardness.
Whereas the choice of key factors responsible for the
level of industrialisation and the details of methodo-
logy followed for analysing the inter-relationship
between industrialisation and the associated variables,
as incorporated in the second and third section, is
devoted to assess and analyse the relative contributions

of the associated variables to the level of industriali-
sation.

6.2 Previous Efforts (Section I)

It is deemed worthwhile here to recapitulate, in
brief, the efforts that have been made by the government
from time to time to wipe out or reduce significantly
the industrial backwardness, which is considered to be
both the cause and the consequence of general economic
backwardness of the State. To begin with, we notice
that upto the Second Five Year Plan, an emphasis was
laid on development of public sector industries rather
than balanced regional development. It was only during
the Third Plan that the need for the latter was felt and
recognised in a true sense. A separate chapter was
devoted to the issue of balanced regional development
wherein it was laid down that 'the first step in this
direction should be to identify the areas in which
various basic facilities such as electricity, larger
supply of raw material and improved means of transport
will become available as a result of development
envisaged in other sectors during the course of the
Third Plan and to prepare programme for assisting the
growth of industries in such areas. The other essential
step would be to provide various kinds of assistance
such as training facilities, credit, technical advice,
tools and machine etc. in an integrated manner to those

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who set up industries in the rural areas and small towns".[1]

As discussed earlier in the dissertation, industrialisation has been accepted as an important instrument that can accelerate the growth of lagging regions and help remove regional imbalances. It is also argued that mere establishment of industrial units is not going to serve the purpose unless it is followed by various promotional and protective measures. In this context, the Third Plan observes 'Large scale industries frequently serve as a spearhead of intensive and broad-based development..... there are many examples both of countries and of regions within a country, in which with limited development in industry, an appreciable rise in living standards has been achieved through the fuller utilisation of local, natural and human resources. There are also instances of areas around massive projects where no great impact on the levels of living of the people is to be observed..... Each region should endeavour to identify, plan for and promote industries which are especially suited to its conditions and for which it can provide relatively greater facilities'.[2]

Thus, we notice that since the Third Plan onwards, numerous measures have been taken in this direction. For instance, on the initiation of National Development Council, the Planning Commission set up two working groups in 1968.

The first Working Group on Identification of Backward Areas was constituted under the chairmanship of B.D. Pande.[3] The group based its criteria of backwardness on the parameters concerning income, and employment in industrial sector and infrastructural facilities needed for industrialisation. The final report, which was submitted in 1969 to the Planning Commission, Government of India, included the list of industrially backward districts across the States in the country.

On the other hand, the second Working Group was set up under the chairmanship of N.N. Wanchoo[4] for recommending fiscal and financial incentives, which could encourage industrial development in backward areas. In its report (1969), the recommendations of the working group comprised exemptions of the industrial establishments in backward regions from various taxes and duties and also grant of some subsidies such as transport, etc.

On the basis of the recommendations of these Groups/ Committees, we notice that quite a large number of programmes have been brought under implementation both at the National and the State levels to promote the process of industrialisation in the deficient regions.

Besides, the National Committee on the Development of Backward Area (NCDBA) under the chairmanship of B.

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Sivaraman[5] was set up in 1978. For operationalising the concept of backwardness, the Committee has suggested two basic approaches : (i) Problem area based, and (ii) Index based.

The first approach was to identify problem areas in different categories by specifying the constraints on development mitigable only through special measures. The second approach was to rely on some composite index for ranking areas below some cut off points as backward. The latter involved three stages : (i) choice of indicators; (ii) a procedure for assigning weights to construct index; and (iii) demarcation of cut off points below which areas were to be designated as backward.

Following the first approach, the committee recommended the six typology based areas suffering from fundamental backwardness. These consisted of (i) Tribal areas, (ii) Hill areas, (iii) Chronically drought prone areas, (iv) Desert areas, (v) Chronically flood affected areas, and (vi) Coastal areas affected by salinity.[6]

On the other hand, based on the second approach, the committee identified, in all, 179 industrially backward districts across the States in the country.[7]

In addition, a package of incentives that take care of industrial activities right from the stage of buying of raw materials to the disposal of finished goods was

also recommended. Allocation of separate funds, financial discipline and elasticity that is maintained to incorporate relevant/suitable amendments in the scope, coverage and organisation of the scheme were other important features of this report.

During the year 1983, Government of India announced some modifications with special thrust on the 'no-industry district'. Under this scheme, the backward districts were classified into A, B, and C categories qualifying for different rates of Central investment subsidy. And hence, approximately 286 districts were identified as industrially backward.[8] Simultaneously, since the mid-Sixties onwards, Industrial Estates, Industrial Complexes and Industrial Areas were established across the States and Union Territories from time to time to provide different kinds of prerequites like space, financial and technical assistance to entrepreneurs especially in backward areas. The underlying assumption behind this move was to create healthy climate for industrial development on one hand and to attract and develop entrepreneurship in backward areas on the other.

As a result of enforcement of the aforesaid measures, in all, 42 districts in Uttar Pradesh were found eligible for Central investment subsidy.[9]

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In addition to the Central Government subsidy, the State Government has established a number of institutions such as, Pradeshiya Industrial and Investment Corporation (PICUP); and U.P. State Industrial Development Corporation (UPSIDC); U.P. Financial Corporation (UPFC); and U.P. Small Industries Corporation (UPSIC) to promote and assist industries particularly in backward districts. Some other State level corporation e.g., U.P. Export Corporation; Handloom Corporations, Electronic Corporation, etc. provide assistance from arranging for raw material to getting the finished goods marketed.

Besides, some other measures include, a 10 per cent of State capital subsidy to 100 per cent export-oriented industrial units; availability of interest free sales tax loans for 5 years; 7 years exemption from sales tax in zero industry districts; exemption from Octroi, providing machine on hire purchase basis along with marketing and packaging facilities.

In addition, special concessions were meted out to Pioneer industry (i.e. one which is set up in zero industry tehsil having investment equal to or more than one crore of rupees) and Prestige industries (i.e. one with investment of Rs.25 crores or more).

Thus, by making available comparatively higher outlays, concessional finance and subsidy, licencing

facility, technical advice and various other promotional and protective measures, entrepreneurs were encouraged to establish industrial units in identified industrially backward districts/regions to accelerate the pace of industrial development.

Hence, on the whole it is seen that all-out efforts have been made in the past both at the national and the State levels to cope up with the problem of industrial backwardness.

As a result of these efforts, there seems to have been some improvements in industrially backward areas of the State. Besides extension of infrastructural facilities, additional industrial units established during the seventies and the eighties, have also gone in favour of backward areas to some extent. But the most disappointing feature that finally emerged out of the analysis in the previous chapter is that still there are 48 districts in Uttar Pradesh which suffer from the industrial backwardness. Besides, the development of entrepreneurship, which is most crucial in the context of industrialisation of backward areas and largely depends upon the building of social or human capability, seems to have been accorded partial treatment so far.

Moreover, the priority that has been accorded to the objective of the balanced regional development in the Eighth Five Year Plan also indicates that a lot

still remains to be done to reduce the severity of industrial backwardness in the State.

6.3 Choice of Variables and Methodology : (Section II)

As stated earlier in the dissertation, there are numerous factors/variables responsible for the levels of industrialisation. Some of them are tangible and some others are intangible. Intangible variables are totally disregarded here simply because of their immeasurable characteristics. On the other hand, the important amongst the tangible ones, as identified in the present context, comprise mainly real gross domestic product (GDP) per capita (X_1); economic infrastructure (X_2); and human or social capability (X_3). These variables have been selected in the present context to operationalise the whole task. The basis for making choice of these variables is briefly described as under:

Conventionally, the Gross Domestic Product (GDP) is defined as the aggregate of cntributions made by primary, secondary and tertiary sectors of an economy. However, the GDP estimates available at the micro-level are confining to the contributions of primary and secondary sectors only. The limiting factor is that the district-wise income shares of tertiary sector have not been estimated so far. Therefore, GDP per capita for different districts in the present context is based on the sum of shares of primary and secondary sectors only.

The choice of this variable is made because of two-fold reasons : First, it demonstrates the level of development or economic status of a district, and second, it acts as a means for and contributes significantly to industrialisation.

Moreover, the economic infrastructure, which is major component of social overhead capital (SOC), is defined in terms of public utility serivces having 'constructiveness' as a common characteristic. Deficiency of economic infrastructure since start of the seventies was identified as a severe lag in triggering off the process of industrialisation especially in backward areas of the State. Hence, in order to bridge the infrastructural gap, a massive investment on development of infrastructure has been made in subsequent Five Year Plans. This variable is selected because of its overwhelming role; it indirectly assists in augmenting the Directly Productive Activities (DPA) in the most significant manner. Without its assistance, the progress of DPA may be hampered to a large extent.

However, for the sake of convenience, the term economic infrastructure is defined here in a restricted manner, using only the two major components i.e., pecentage of villages electrified to total inhabited villages and the length of pucca roads per hundred sq. km. of area. Moreover, a geometric mean between the two

is used as a proxy for composite index of economic infrastructure of a district.

Lastly, social or human capability, in the present context, is described as the capability of human beings in a given region to exploit growth potential of a region by effective participation of the local people. The essence of this factor then lies in the formation and the use of such capability in a given region.

Moreover, the importance of social capability emerges out of the fact that it is involved with human development. Human beings are not only a major factor of production but also the chief beneficiary for whom the gains of industrialisation or for that matter development are intended.[10]

Furthermore, modern industrialisation, due to its heavy dependence on science oriented technology involves co-operation with large and diverse group of co-workers and the use of elaborate equipment. Hence, a group of technically trained or educated people is required, who are capable of understanding and controlling the complicated bases of modern technology. Besides, such personnel are needed not only to follow specific instructions but also to adapt and assimilate the modern technology.[11]

Generally, it is felt that backward regions are not picking up the process of industrialisation because of

the lack of social capability. In this context, Simon Kuznets has rightly remarked that the backward regions can enjoy the benefits of being a victim of relative backwardness only if they are strong enough in social or human capability to adapt and assimilate the modern technology as stated just before.[12]

As a matter of fact, social capability, that is an integral part of human development, is defined as 'a process of enlarging peoples' choices. The most critical ones are to lead a long and healthy life, to be educated and enjoy a decent standard of living'.[13]

In our exercise here the human developmnt is taken as a proxy for social capability. Thus, for operational purposes there is need to construct a human development index at the micro/district level. In this context, the United Nations Development Programme (UNDP) has already made efforts to construct HDI, details of which are given in Human Development Report - 1990.[14]

The HDI, according to UNDP report is arrived at by clubbing the three variables i.e. life expectancy, literacy percentage and real GDP per capita. Hence, we notice that the variables concerning both the ends and means are clubbed togather on the plea that human development captures the both.[15] However, one can advocate an argument convincing to the environment that real GDP per capita is used as a means to meet the ends

of human beings i.e., acquiring more and more knowledge
and leading a long and healthy life. In other words,
the influence of the former is already subsumed in the
latter. Hence, clubbing of the variables concerning
both the means and ends together does not seem to hold a
strong base. Therefore, it is deemed appropriate here,
in the present exercise to confine the HDI to the
variables concerning ends only i.e., life expectancy and
literacy percentage.

As a matter of fact, the data for life expectancy
is not available at the district level. Therefore, the
inverse of the 'under-five child mortality rate' is
taken as a proxy for health status or life expectancy
for different districts of the State for the year 1981.

Mortality indicators have been one of the
traditional measures of health status.[16] Empirical
evidences suggest that under-five mortality rates have
important influences on the nutrition and health aspect
particularly pertaining to women, infant and children.
It is also indicative of better performance of education
especially as regards female literacy. Thus, estimates
of life expectancy are said to be strongly influenced by
under-five mortality rates particularly in developing
countries. Thus, mortality estimates can be safely used
in place of life expectancy for which the data are not
easily available.[17]

Although, district-wise literacy percentage is available for 1991 but we have deliberately used the literacy percentage of 1981 in order to consider the data of both the aforementioned variables for the same point of time. However, this is not going to undermine the importance of the present exercise in the sense that the main objective here is to assess and analyse the importance of selected variables in the level of industrialisation. Hence, even the use of latest data is not expected to bring significant differences in relative importance of the selected variables based on the data of 1981.

To measure the effects of associated variables on the level of industrialisation, we have applied unrestricted Cobb-Douglas production function. The computationally attractive characteristic of this form is that it becomes linear in the logarithms of the variables.[18] Therefore, the production function used here is in logarithmic form as follows :

$$\text{Log } Y = \text{Log } A + b_1 \log x_1 + b_2 \log x_2 + b_3 \log x_3$$

Where,

$\log Y$ = level of industrialisation

$\log x_1$ = real GDP per capita

$\log x_2$ = index of economic infrastructure

$\log x_3$ = human development index

$\log A$ = constant term

$$
\left.\begin{array}{l}
b_1 \\
b_2 \\
b_3
\end{array}\right\} =
$$
These are the transformation parameters for the levels of respective variables (i.e. X_1, X_2, X_3)

6.4 Industrialisation and the Associated Variables : (Section III)

Industrialisation, as stated earlier, is an outcome of a complete set of circumstances and situations like geographical conditions, availability of natural resources, level of agricultural development, infrastructural facilities, degree of urbanisation and social capability including entrepreneurship. Variation in the pace and dispersal of industrialisation may be due to any one or all of these factors/variables. However, the choice is limited because of the question of quantifiability and non-availability of data. Owing to this very limitation, we have selected only three independent variables of real GDP per capita (X_1), economic infrastructure (X_2), and social capability (X_3) with a view to assessing and analysing their relative importance in influencing the level of industrialisation (y) considered as a dependent variable.

Prior to assessing and analysing the contributions of the aforesaid independent variables to the level of industrialisation, it is, however, deemed worthwhile to examine the relevance of inclusion of social capability

as one of the explanatory variables in the application of proposed production fuction model. To start with, conventionally it is believed that there is a direct positive relationship between the social or human capability and the level of industrialisation; higher the level of the former, higher would be the level of the latter and vice versa.

To begin with, we have tried to examine and analyse the aforesaid relationship in case of thirteen major states of India by considering the share of secondary sector in total State Domestic Product (SDP) as representative of the level of industrialisation and the Human Development Index (HDI) as a proxy to the level of social capability. The State-wise data concerning these two aspects are shown in Table 6.1.

It would be evident from Table 6.1 that, by and large, the States having the level of industrialisation above the national average also qualify for the higher level of social capability. Similarly, the States having the lower level of industrialisation also qualify for the lower level of social capability.

Besides, the coefficient of correlation between the two, which emerges as 0.59, also favours the positive relationship between industrialisation and social capability.

Table 6.1 : <u>State-wise Share of Secondary Sector in Total SDP and Human Development Index</u>

Sl. No.	States	Share of Secondary Sector in total SDP (Percentage) (1988-89)	Human Development Index
1	2	3	4
1.	Kerala	23.6	0.71
2.	Punjab	21.6	0.66
3.	Maharashtra	34.2	0.61
4.	Haryana	23.5	0.58
5.	Karnataka	28.1	0.45
6.	Gujarat	32.0	0.42
7.	Tamil Nadu	30.4	0.42
8.	West Bengal	25.5	0.38
9.	Andhra Pradesh	16.3	0.31
10.	Orissa	16.6	0.17
11.	Rajasthan	16.5	0.13
12.	Bihar	17.3	0.13
13.	Uttar Pradesh	19.8	0.07
14.	India	24.1	0.36

Coefficient of correlation between columns 3 & 4 .5876

Source : HDI is taken from the Draft Eighth Five Year Plan 1992-97 and Annual Plan - 1992-93, General Profile Vol.I, Government of Uttar Pradesh, Planning Department. Besides, the share of secondary sector in total SDP is derived from National Accounts Statistics, CSO, Government of India.

Among the exceptions, the case of Kerala seems to be the most crucial; inspite of having the highest HDI (0.71) it qualifies for relatively lower level of industrialisation with 23.6 per cent share of secondary sector in total State Domestic Product (SDP), as compared to Maharashtra and Gujarat. The factors mainly responsible for this state of affairs consist of : (i) excellent performance of on-going welfare programmes; and (ii) the regular flow of remittances from the Middle East countries.

Considering the positive relationship between the two variables under consideration it may be safely hypothesised that there would be an inverse relationship between the industrial backwardness and the social capability. Therefore, efforts have also been made through the subsequent paragraphs to examine and analyse this inverse relationship, using the micro-level data of U.P.

To begin with, we have classified all the 53 districts of the State (for which adequate data is available for the year 1986-87) into three categories namely; (i) the most industrially backward; (ii) the less industrially backward; and (iii) the least industrially backward by taking into account an inverse order of the district-wise composite indices of industrialisation.

Besides, simple arithmetic means separately in respect of both composite index of industrialisation (CII) and human development index (HDI) for different districts constituting each of the categories have been worked out to demonstrate the aggregate picture of CII and HDI for the aforesaid three categories, as would be evident from the following table.

Table 6.2 : Category-wise Composite Index of Indus-trialisation (CII) and Human Development Index (HDI) in U.P.

Sl. No.	Categories	No. of districts	Arithmetic Mean	
			CII	HDI
1.	Most industrially backward	38	37.39	.325
2.	Less industrially backward	8	133.93	.523
3.	Least Industrially backward	7	304.14	.539
	State	53	100.00	.365

Note : The State level data of CII and HDI are taken from Appendix VI.1. Whereas arithmetic means of different categories are worked out with the help of the values of individual districts constituting the catogery.

Source: Based on Appendix VI.1

The above table speaks that the most industrially backward category of districts with an average composite index of industrialisation of 37.39 has comparatively

lower level of human development index, (0.325) which also falls below the State average of 0.365.

The less backward category with an average CII of 133.93 corresponds to higher level of social capability (.523) while the least backward category (304.14) qualifies for the highest level of social capability (.539). Summingly, one may infer that higher the incidence of industrial backwardness, lower would be the level of social capability.

Furthermore, a similar exercise for the top five most industrially backward districts and the bottom five least industrially backward districts of the State, as shown in Table 6.3, also indicates that average HDI is considerably low in the former as compared to latter.

Besides, while ranking the districts in accordance with the level of industrialisqation and human development Index, it is noticed that excepting Pithoragarh in the top five districts and Ghaziabad in the bottom five districts, the rest of the districts follow the order of the overall inverse relationship. Thus, one can argue with more confidence that there does exist an inverse relationship between the level of industrial backwardness and the HDI or social capability.

Table 6.3 : <u>CII and HDI in the Top Five and the</u>
<u>Bottom Five Districts</u>

Sl. No.	Districts	CII	Rank	HDI	Rank
	<u>Top Five Most Industrially</u> <u>Backward Districts</u>				
1.	Lalitpur	9.14	1	.165	4
2.	Hamirpur	10.18	2	.280	3
3.	Pratapgarh	11.23	3	.280	3
4.	Pithoragarh	11.47	4	.690	1
5.	Banda	11.63	5	.335	2
	Average for Top Five Districts	10.78	--	.350	--
	<u>Bottom Five Least Industrially</u> <u>Backward Districts</u>				
1.	Ghaziabad	604.04	1	.585	3
2.	Kanpur	244.03	2	.710	1
3.	Lucknow	237.78	3	.650	2
4.	Meerut	228.41	4	.570	4
5.	Agra	203.53	5	.470	5
	Average for Bottom Five Districts	303.56	--	.587	--

Source : Derived from Appendix VI.1.

It emerges from the foregoing analysis that upgrading or strengthening of the level of social capability is invariably needed not only to overcome the problem of industrial backwardness but also the general backwardness of the State.

Once we have examined the relevance of the social capability as a variable now we proceed further to analyse the relationship between the identified associated variables and the level of industrialisation.

For determining the coefficients of the selected independent variables, the district-wise composite index of industrialisation (Y) has been treated as a function of the three selected independent variabls i.e., X_1, X_2, and X_3. The coefficients, thus, arrived at by estimating the production function separately for the three categories (i.e. non-industrialised, semi-industrialised and industrialised) and whole of the State are shown in Table 6.4.

It would be evident from the Table 6.4 that among the independent variables, the economic status or level of development represented by real Gross Domestic Product (GDP) per capita (X_1) contributes most significantly to the level of industrialisation at the State level, as witnessed by the highest value of b_1 (i.e. 1.378). The next in order of importance is the economic infrastructure (X_2) with b_2 (i.e. 1.348), followed by the human development index (X_3) with b_3

Table 6.4 : Category-wise Estimates of Production Function for Organised Manufacturing Sector in U.P.

Sl. No.	Category	Constant	b_1 X_1	b_2 X_2	b_3 X_3	R^2	$\bar{R}^2$	S.E.	F. Value	Durbin and Watson
0	1	2	3	4	5	6	7	8	9	10
1.	Non-Indus-lised	-7.3958	0.796636** (2.281281)	1.262635* (3.364290)	-.0177063 (-1.261137)	0.300349	0.260369	0.564344	4.865182	0.828775
2.	Semi-Indus-trialised	-1.4319	0.418135** (3.472135)	0.759931* (2.422164)	-0.012265 (-0.110538)	0.802327	0.723258	0.084826	5.412090	2.179731
3.	Industria-lised	0.8080	0.704125 (2.037162)	0.120576 (0.298147)	0.313608 (0.490294)	0.596692	0.395038	0.248305	1.479482	1.387832
	U.P.	-10.5885	1.378139* (4.061921)	1.347816* (3.149461)	0.116373 (0.664752)	0.4421	0.4198	0.77475	12.9428	0.993274

Note : Figures in parentheses give 't' values of the estimates.

  * Significant at the level of one per cent.
 ** Significant at the level of five per cent.

Source : Based on the data given in Appendix VI.1.

(i.e. 0.116). The 't' values of the first two independent variables (X_1 and X_2) are significant at the level of one per cent, whereas the corresponding 't' valaue of the third independent variable, i.e., HDI is found to be statistically insignificant. This is corroborrative to our earlier finding that HDI (i.e., social or human capability) in U.P. is the lowest among all the major 14 States of India. And obviously because of this, not only its contribution to the level of industrialisation is relatively low but it is also one of the important factors chiefly responsible for general industrial backwardness of the State. One of the policy implication deducible from the foregoing analysis is that in any strategy of industrialisation, development of social/human capability (or entrepreneurship) in U.P. should also be accorded priority, besides giving due weightage to real GDP per capita and economic infrastructure.

On the other hand, in regard to the category of non-industrialised districts, it is clear from the Table 6.4 that economic infrastructure (X_2) as an independent variable has made the highest contribution to level of industrialisation, as evidenced by the value of b_2 i.e., 1.263 which is significant at the level of one per cent. The real GDP per capita (X_1) with b_1 equivalent to 0.797 occupies the second place so far as its contribution to level of industrialisation in this category is

concerned. The 't' value concerning this variable is found to be significant at the level of 5 per cent. It is, however, disheartening to note that the role of HDI (i.e. social/human capability) in level of industriali- sation, as witnessed by the negative value of b_3 (i.e. - 0.018) is insignificant. In this context, it would be relevant to add that the districts constituting this category are non-industrialised and they generally lack in social/human capability. Therefore, as witnessed, by its coefficient in production function, HDI has played an insignificant role in level of industrialisation. However, on a theoretical plane its role in industriali- sation cannot be undermined. Even if Government ensures availability and adequacy of both economic inrastructure and financial resources, the lack of social/human capability will, no doubt, retard the progress of industrialisation in industrially backward districts. Owing to this deficiency, these districts will not be able to assimilate and adapt the modern technology. Hence, commercial applications of new innovations would be the remotest possibility in such cases.

Besides, in case of semi-industrialised category, the ordering of explanatory variables in making contributions to the level of industrialisation is exactly the same as experienced in respect of non- industrialised category. The contribution of economic

infrastructure, as witnessed by the value of coefficient is the highest, (i.e. 0.760), followed by the real GDP per capita (0.418) and HDI (-.012). It is again, disappointing to note that the contribution of HDI in this category is also found to be negative but insignificant.

Moreover, regarding the industrialised category the values of coefficients in respect of independent variables paint a picture slightly different from what we experienced in case of earlier two categories. Here in this case, it is seen that the highest contribution to industrialisation is made by the real GDP per capita, followed by HDI and economic infrastructure. Comparing the estimates of earlier categories, we also notice a little contrast in respect of HDI in this category; its contribution to level of industrialisation is positive with b_3 equivalent to o.314 but disappointedly insignificant. Inspite of R^2 being high (0.5966), the 't' values of all the three explanatory variables are not found to be significant in this category.

It is clear from the foregoing analysis that social/ human capability, as represented by HDI in the present context, have made a positive contribution to the level of industrialisation at the State level and also in respect of industrialised category. But its role in industrialisation is found to be insignificant

in respect of all the three categories. The coefficient of correlation between the composite index of industrialisation (CII) and human development index (HDI), which comes to 0.33 at the State level, as recorded in the following table, also goes in favour of the aforesaid findings that the contribution of HDI to industrialisation is not statistically significant.

Tabel 6.5 : Region-wise Coefficient of Correlation Between Composite Index of Industriali- sation (CII) and Human Development Index (HDI) in U.P.

Sl. No.	Region	Number of Districts	Coefficient of Correlation
1.	Bundelkhand	5	0.6096
2.	Central	9	0.9719
3.	Hill	5	− 0.0345
4.	Western	19	0.5315
5.	Eastern	15	0.2381
	Combined	53	0.3337

Source : Derived from Appendix VI.1..

However, at the regional level, the association between the two provides a mixed kind of scenario. The Central, the Western and the Bundelkhand regions have demonstrated a significantly positive relationship between CII and HDI. Contrary to this, in case of the

Eastern region, although the association between the two is positive but not significant. Besides, the value of 'r' in case of the Hill region is negative but not significant.

6.5 Conclusion

Summingly, from the foregoing analysis one may conclude that the State of Uttar Pradesh is not adequately equipped with social or human capability, resulting in lack of entrepreneurship especially in industrially backward districts. In its absence, percolation of benefits of modern technology to such areas/districts seems to be the remotest possibility. This is more so when one has atleast some belief on the remarks of Simon Kuznets that in order to enjoy the benefits of relative backwardness, the area must be strong enough in social/human capability so as to assimilate and adapt modern technology for making skilfully the commercial applications of new innovations. In this way, development of social capability including entrepreneurship becomes a sine-qua-non for triggering off the pace and the process of industrialisation especially in industrially backward districts of the State.

Notes and References

1. Government of India, Third Five Year Plan, Planning Commission, Para 22, p.434.

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3. B.D. Pande, Identification of Backwardness, Report of the Working Group, Government of India, Planning Commission, New Delhi, 1969.

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7. Ibid., p.45.

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9. See Appendix V.5 of the present thesis.

10. R.B. Sutcliffe, Industry and Underdevelopment, Addisson — Wesley Publishing Co., London, 1971, pp.107-108.

11. S. Kuznets, Economic Growth and Structure — Selected Essays, Oxford and IBH Publishing Co., New Delhi, 1974, pp.200-201.

12. Ibid., pp.186-189.

13. UNDP, Human Development Report, Oxford University Press, New York, 1990, p.10.

14. Ibid., p.109.

A Mathematical formulation of the Human Development Index (HDI) : The Human Development Index (HDI) is constructed in three steps. The first step ;is to define a measure of deprivation that a country suffers in each of the three basic variables — life expectancy (X_1), literacy $(X_2$ and real GDP per

capita (X_3). A maximum and a minimum value is determined for each of the three variables given the actual values. The deprivation measure then places a country in the range of zero to one as defined by the difference between the maximum and the minimum. The I_{ij} is the deprivation indicator for the jth country with respect to i^{th} variable and it is defined as :

$$I_{ij} = \frac{(\max_j X_{ij} - X_{ij})}{\max_j X_{ij} - \min_j X_{ij}} \qquad \ldots\ldots (1)$$

The second step is to define as average deprivation indicator (I_j). This is done by taking a simple average of the three indicators.

$$I_{ij} = \sum_{i=1}^{3} I_{ij} \qquad \ldots\ldots (2)$$

The third step is to measure the Human Development Index (HDI) as one minus the average deprivation index.

$$(HDI)_j = (1 - I_j) \qquad \ldots\ldots (3)$$

15. Ibid., pp.11-12.

16. For details see J.E. Park and K. Park, Preventive and Social Medicine, M/s Banarasidas Bhanot, Jabalpur, 1986, p.23.

17. Human Development Report, 1990, op.cit., p.44.

18. P.A. Yotopoulos and J.B. Nugent, Economics of Development – Empirical Investigations, Harper and Row Publishers, New York, 1976, p.48.

CHAPTER VII

MAIN CONCLUSIONS

7.1 Introduction

The present work focuses on the analysis of inter-regional patterns of industrialisation in Uttar Pradesh (U.P.) during the period 1970-71 to 1986-87. Separate analyses have also been carried out for the two sub-periods i.e., 1970-71 to 1980-81 and 1980-81 to 1986-87. The first three chapters of the dissertation are devoted to mainly describe the preliminaries or background material needed for making a choice of the concept of industrialisation, its determinants and measurement on one hand and spelling out the objectives, hypotheses and methodology on the other. Main conclusions emerging out of the analysis in chapters IV, V and VI of the dissertation are stated in subsequent sections.

7.2 Sectoral Pattern of Industrialisation

In chapter IV, the study comes out with the finding that there is a considerable difference in the pattern of inter-sectoral contributions between developed and less developed countries (LDCs). In case of the former, as development proceeds, the secondary sector replaces the primary sector and eventually gets replaced by the

tertiary sector in importance. Most of the developed
countries are found to have experienced this general
pattern of development in actual practice.

However, majority of the less developed countries
(LDCs) including India and specifically the State of
Uttar Pradesh seem to have digressed from the above
mentioned general pattern. Firstly, the primary sector
has maintained its dominance for a longer period and
secondly and more importantly, the tertiary sector
instead of showing a spurt in its growth at a maturing
stage of development either has grown simultaneously
with the other two commodity producing sectors or has
sometimes outgrown the secondary sector in an early
phase of development. In addition, what is more
disturbing is that a highly biased growth of tertiary
sector arising out of scarcity of job opportunities in
the commodity producing sectors is likely to result in
short supplies of commodities which, at least in the
short period, may add fuel to the fire of inflation
rather than contributing significantly to overall
development. It is also found that the share of this
sector in State Domestic Product (SDP) is much larger
than its corresponding share in total employment.
Hence, this 'premature tertiarisation' is needed to be
watched and handled carefully. This requires that a
separate study in this area is conducted so that its

findings could be used for identifying the corrective measures to be undertaken for balanced growth of the economy.

The study also shows that even if some districts are not agriculturally advanced, they can secure higher levels of industrialisation through different kinds of promotional and protective measures. Hence, it seems that a critical minimum level of agricultural development is not necessary but indeed a desirable condition. This way, agricultural advancement becomes an added advantage of an area to initiate and promote industrialisation relatively at a faster speed than the one which would do so in its absence.

Besides, within the industrial sector, there has been a considerable progress in the organised sector of U.P. in terms of number of units, employment, capital employed and value added during the period of 1971-87. It is, however, noticed that the increase in capital employed and value added was much higher as compared to number of units and employment. Thus, there does not seem to be much scope of employment in the organised industrial sector of U.P. On the other hand, looking to the progress of both the organised and unorganised sectors, it is observed that contribution of the former to the State Domestic Product (SDP) based on new series at 1980-81 prices has, in the recent past, exceeded that

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of the latter. But in respect of employment, the share of unorganised sector in total employment of the manufacturing sector in U.P. has increased from 85.0 per cent to 87.9 per cent in 1988. With the result, the average annual growth rate of employment in this sub-sector during 1978-88 was much higher (i.e.,3.56 per cent) as compared to the corresponding growth of employment in organised sector (i.e., 1.10 per cent). This way, for accelerated industrialisation of the State, we have to follow two-pronged approach. To meet the efficiency aspect, an emphasis should be laid not only on development of organised sector but also on productivity improvements in unorganised sector. Added to this is the equity aspect that can be ensured only by all round development of unorganised sector that promises a wider scope for employment generation.

The study of the sectoral pattern of industrialisation during 1971-87 for nineteen major industry groups in U.P. indicates that in terms of contribution there has been a considerable shift from traditional, agro-based industries to modern sector industries particularly engineering and electronics.

The analysis of the resource-based classification of industries also demonstrates that changes in the production structure have gone in favour of modern sector industries. The growth rate of industrial

production in engineering based industries of U.P. during the period 1971-87 was considerably high (i.e., 21.9 per cent) as against the corresponding growth of 12.4 per cent in case of agro-based industries.

It transpires from the literature that the path of industrialisation in developed countries was largely influenced by the immediate needs of the consumer goods. This is the reason that in the initial phase of industrialisation of these countries, the consumer goods industries dominated over the capital goods industries and the ratio between the two in respect of value added was greater than unity. However, in the subsequent phases of industrialisation, this ratio declined and went in favour of capital goods industries.

Contrary to above, in some of the developing countries particularly India and the State of U.P., priority was given to development of capital goods industries under the planned development programme in the initial phase of industrialisation in order to generate industrial climate for further development of the industrial sector. Obviously, because of this, the ratio of value added between consumer goods and capital goods industries in U.P. is found to be low (i.e., <1) during the reference period.

In this context, it would be relevant to add that for newly industrialising states called 'latecomers',

there is no necessity to follow the pattern as demonstrated by the advanced countries called 'forerunners'. Since the new technologies and new products are already available, it is technically quite feasible for such States to set up a complete modern industrial structure and industrialise with a much higher net output ratio of capital goods to consumer goods industries than the ratio which prevailed in countries industrialised at an earlier time.

Analysis of a decadal growth rates of the industrial sector suggests that the performance of manufacturing sector was much better in the eighties as compared to the sixties and the seventies. A revised policy tuned towards dispersal of industries and concerted efforts on accelerated development of industrially backward areas seem to have inter-alia, been mainly responsible for better performance of the manufacturing sector in the State during the eighties.

7.3 Spatial Pattern of Industrialisation

Main conclusions emerging out of the analysis in Chapter - V are as follows:

The relative regional contributions to the income originating from the primary sector at the State level have remaind almost the same during the period 1970-71

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to 1986-87. Similarly excepting the Western and the
Bundelkhand regions, the share of the remaining three
regions in total income of the industrial sector at the
State level have either marginally reduced or remained
constant during this period. Thus, it appears that the
performance of the industrial sector of the backward
regions has not made any significant contribution to
balanced regional development of the State.

Regarding the regional performance of the organised
industrial sector, there seems to have been some
perceptible changes over the period in terms of number
of units, employment and value added. The range in
respect of value added has marginally declined, whereas
the corresponding range in respect of number of units
and employment has gone up. Interpretation of these
findings suggests that the gap between the backward and
the forward region is still of alarming nature. The
Western region enjoys the first position, while the
Bundelkhand region stands at the bottom in terms of all
the three aforesaid variables. The contribution of the
unorganised sector to the total income of the
manufacturing sector at 1970-71 prices was relatively
much higher as compared to the organised sector in
almost all the regions (excepting the Western) during
the reference period. This is indicative of the fact
that the role of the former in the process of
industrialisation cannot be undermined. In other words,

the development of unorganised sector seems to be sine-
qua-non for accelerating the process of industrialisa-
tion in the State.

The partial productivity ratios suggest that the
pace of labour productivity was much higher as compared
to that of capital productivity in manufacturing sector,
inspite of the marked increase in capital intensity
during the reference period. This might be because of
the two-fold reasons. First, there might have been
under-utilisation of the installed capacity resulting
from the increased capital intensity. Second, the rate
of absorption of labour force in the organised
manufacturing sector might have been extremely low and
not commensurate with the growth of capital intensity.

The income originating from manufacturing sector in
different regions of the State during the period has
increased at a much higher rate, as compared to the
corresponding increase in net domestic output. It
deciphers from the differentials in the percentage
increase that both the level of industrialisation and
the level of overall development have shown marked
improvements but the contribution of the former does not
seem to have been forcefully effective in augmenting the
desired level of development. Moreover, in regard to
regional contributions, the hierarchical order, that we
notice in respect of both industrialisation and

development during 1970-71, has continued to remain almost the same during the year 1986-87 also.

The exercises based on Composite index and Normative approaches have suggested that out of the total 56 districts in the State, the number of industrially backward districts, as identified in the present study is as high as 45. However, comparing this list of industrially backward districts with that of the Government of India we finally arrive at the conclusion that there are, in all, 48 industrially backward districts in the State. This provides a sufficient ground to further generalise that the whole of the State is industrially backward.

The study has also comeout with the finding that there exists both inter-regional and intra-regional variations in levels of industrialisation to a considerable extent. In respect of the former, it is observed that more than 80 per cent of the total additional units, during the period of the study were established in forward regions (i.e., the Western and the Central) and hardly 20 per cent could be set up in the backward regions. Moreover, the disparities are also pronounced in case of the latter leading to agglomerated pattern of industrialisation. This has happened mainly because of lopsidedness in extension of industrial units and their concentration at a few districts of a region. Therefore, the persisting

tendency of inter and intra-regional disparities calls
for greater attention that has to be paid for dispersal
of industrial units at the micro-level.

It is clear from the coefficient of specialisation
for different districts that the Western region is
having the most diversified structure of industrial
activities, whereas the Bundelkhand region qualifies for
the least diversified structure. Moreover, within the
region, some districts qualify for better diversified
structure and some others demonstrate less
diversification. As a matter of fact, the greater
diversified structure of industries promises for better
inter-industry linkages, whereas the reverse is true in
case of the less diversified structure. This way, one
can draw an inference that the Western region because of
being the most diversified has greater inter-industry
linkages and hence better scope for the expansion of
industries. Contrary to this, the Bundelkhand region
because of being the least diversified qualifies for the
lower inter-industry linkages and hence less scope for
expansion of industries. Besides, the other regions
also demonstrate significant differences in levels of
inter-industry linkages. In view of this, a micro level
planning is deemed to be sine-qua-non for overall
industrialisation of the State.

Analysis based on the district-wise location
quotient of different industry groups suggests that
developed districts are having relatively larger number
of industry groups and qualify for strong industrial
base. Whereas the backward districts have smaller
number of industry groups and hence qualify for low
industrial base. Truly speaking, the strong industrial
base is an added advantage to a district for gearing up
the process of industrialisation. Therefore, in any
strategy of industrial development, planning for
strengthening the industrial base deserves utmost
priority at the micro level.

Finally, dovetailing the major findings of both the
inter-sectoral and inter-spatial patterns of industria-
lisation, we arrive at the conclusion that there has not
been any remarkable change in inter-regional patterns of
industrialisation in U.P. during the period 1971-87.
This is adequately supported by the common
characteristics, which have emerged out of the analysis
of inter-sectoral and inter-spatial aspects of
industrialisation respectively in chapters IV and V of
the dissertation. These consist of lower order of the
ratios between consumer goods and capital goods
industries (i.e., < 1) and supremacy/dominance of
unorganised sector over the organised one in terms of
contribution of both the value added and employment.

The other findings, which conform to the aforesaid conclusion, consist of those as follows. First, the most diversified structure of industries has been heavily biased to the forward regions of the State (i.e., the Western and the Central). Second, there has been almost no change in inter-sectoral contribution of agriculture including animal husbandry and the manufacturing in different regions of the State during the reference period. Finally, there has not been any significant change in regional contributions to the industrial sector of the State in terms of number of units, employment and value added during the period under consideration.

7.4 Factors Contributing to Industrialisation : A Micro-level Analysis

In Chapter - VI, correlating the level of industrialisation with Human Development Index (HDI) across the States in India, the coefficient, which emerges as 0.59, indicates that there is a positive relationship between the two. In its support, it is observed that, by and large, the States having the level of industrialisation above the national average also qualify for the higer level of HDI or social capability. Similarly, the vice versa holds good in case of the States having the level of industrialisation below the national average. However, important among the exceptions is the case of Kerala. In spite of having

the highest level of HDI (0.71), it qualifies for relatively lower level of industrialisation as compared to Maharashtra and Gujrat. This state of affair is attributed to mainly (i) excellent performance of on-going welfare programmes, and (ii) the regular flow of remittances from the Middle East countries.

Analysis of the relationship of arithmetic means between Composite Index of Industrialisation (CII) and Human Development Index (HDI) separately for the three categories of the most industrially backward, the less industrially backward and the least industrially backward districts of the State has helped us to draw an inference that higher the incidence of industrial backwardness, lower would be the level of social capability.

The ranking of the top five most industrially backward districts in respect of CII and HDI also goes in favour of the statement that there does exist an inverse relationship between the level of industrial backwardness and the HDI or social capability. Hence, upgradation or strengthening of the level of social capability is invariably needed not only to overcome the problem of industrial backwardness but also the general backwardness of the State.

Contributions of the associated variables (i.e. real GDP per capita, economic infrastructure and social

capability) to the level of industrialisation, as measured through an application of unrestricted Cobb-Douglas Production Function, have clearly demonstrated that the economic status or level of development represented by the real Gross Domestic Product (GDP) per capita contributes most significantly to the level of industrialisation at the State level, the next in importance being economic infrastructure followed by the social capability. Thus, the role of HDI or social capability in the level of industrialisation is found to be insignificant, which might be attributed to the lowest level of HDI in U.P. among all the 14 major States of India.

On the other hand, at the disaggregated level in the category of non-industrialised districts, it is the economic infrastructure, which has made the highest contribution to the level of industrialisation, followed by GDP per capita and the social capability. Besides, the ordering of explanatory variables in making contributions to the level of industrialisation in semi-industrialised category is exactly the same as experienced in case of the non-industrialised category. However, in regard to industrialised category the coefficients paint a slightly different picture; the highest contribution to industrialisation is made by real GDP per capita followed by HDI and economic infrastructure.

Summingly, we notice that, both economic infrastructure and real GDP per capita have made significant contributions to the level of industrialisation. Contrary to this, the role of social capability is found to be insignificant in this regard both at the State as well as diaggregated level. In spite of this, considering the overwhelming importance of social capability on theoretical plane its role in industrialisation cannot be undermined. It is, therefore, suggested that in any strategy of industrialisation, social capability should be accorded the highest priority besides giving due weightage to real GDP per capita and economic infrastructure.

It emerges from the foregoing discussion that the State of U.P. is not well equipped with social capability resulting in lack of entrepreneurship especially in industrally backward districts. In its absence, a spread of modern technology becomes the remotest possibility, narrowing down the scope of assimilation and adaptation of modern technology for making skilfully the commercial application of new innovations. Hence, development of social capability (entrepreneurship) seems to be an important pre-requiste for triggering off both the pace and the process of industrialisation especially in industrially backward districts of the State.

Appendix IV.1 : Plan Outlay by Heads of Development - India

(Rs. in crores)

Items	First Plan Actual	Second Plan Actual	Third Plan Actual	Annual Plan Actual	Fourth Plan Actual	Fifth Plan Actual	Annual Plan Actual	Sixth Plan Actual	Seventh Plan Outlay	First to Seventh Plan
1	2	3	4	5	6	7	8	9	10	11
1. Agriculture & allied sectors	290 (14.8)	549 (11.8)	1089 (12.7)	1107 (16.7)	2320 (14.7)	4865 (12.3)	1997 (16.2)	13620* (12.2)	19429* (10.8)	45266 (12.0)
2. Irrigation & flood control	314 (16.0)	430 (9.2)	665 (7.8)	471 (7.1)	1354 (8.6)	3877 (9.8)	1288 (10.6)	10930 (10.0)	16979 (9.4)	36308 (9.6)
3. Energy	269 (13.7)	452 (9.7)	1252 (14.6)	1213 (18.3)	2932 (18.6)	7400 (18.8)	2241 (18.4)	30752 (28.1)	55129 (30.6)	101640 (26.9)
4. Industry and minerals	97 (5.0)	1125 (24.1)	1967 (22.9)	1636 (24.7)	3107 (19.7)	9582 (24.3)	2640 (21.7)	16948 (15.5)	22108 (12.3)	57210 (15.6)
4.1 Large and medium industries	55 (2.8)	938 (20.1)	1726 (20.1)	1510 (22.8)	2864 (18.2)	8989 (22.8)	2384 (19.6)	15002 (13.7)	19355 (10.8)	52823 (14.0)

Appendix IV.1 Contd.

1	2	3	4	5	6	7	8	9	10	11
4.2 Village and small industries	42 (2.1)	187 (4.0)	241 (2.8)	126 (1.9)	243 (1.5)	593 (1.5)	256 (2.1)	1945 (1.8)	2753 (1.5)	6386 (1.7)
5. Transport and communication	518 (26.4)	1261 (27.0)	2112 (24.6)	1222 (18.4)	3080 (19.5)	6870 (17.4)	2045 (16.8)	17678 (16.2)	27119 (15.1)	61905 (16.4)
6. Social services	472 (24.1)	855 (18.3)	1492 (17.4)	976 (14.7)	2985 (18.9)	6834 (17.3)	1968 (16.2)	15917 (14.6)	31545 (17.5)	63044 (16.7)
7. Miscellaneous	–	–	–	–	–	–	–	3448 (3.2)	7690 (4.3)	11138 (2.9)
Total	1960 (100.0)	4672 (100.0)	8577 (100.0)	6626 (100.0)	15779 (100.0)	39426 (100.0)	12177 (100.0)	109292 (100.0)	180000 (100.0)	378509 (100.0)

Note : Figures in parentheses are respective percentages to the total. Upto Sixth Plan Energy includes only power thereafter also including non-conventional energy.

   * : Includes rural development.

Source : Cols. 2 & 3 'Kothari's Year Book on Business and Industry 1988, p.14 and the remaining cols. from Economic Survey, 1988-89, Government of India, pp.40-43.

Appendix IV.2 : Plan Outlay by Heads of Development - U.P.

(Rs. in crores)

Items	First Plan	Second Plan	Third Plan	Annual Plan	Fourth Plan	Fifth Plan	Annual Plan	Sixth Plan	Seventh Plan	First to Second
1	2	3	4	5	6	7	8	9	10	11
Agriculture and allied sectors	23.6 (15.4)	24.1 (10.3)	49.8 (8.9)	30.3 (6.6)	77.9 (6.7)	131.3 (4.5)	41.8 (5.0)	360.8 (5.5)	767.3 (6.8)	1506.9 (6.2)
Co-operation	1.31 (0.9)	4.1 (1.8)	8.1 (1.4)	2.0 (0.4)	21.3 (1.8)	32.3 (1.1)	10.7 (1.3)	82.3 (1.2)	84.1 (0.7)	246.1 (1.0)
Rural development	8.5 (5.5)	27.6 (11.8)	48.8 (8.7)	22.5 (4.9)	33.7 (2.9)	109.3 (3.8)	42.7 (5.1)	458.0 (6.9)	625.9 (5.5)	1376.9 (5.7)
Irrigation and flood control	38.7 (25.2)	41.1 (17.6)	119.2 (21.3)	131.0 (28.8)	293.8 (25.2)	715.2 (24.6)	226.7 (27.2)	1395.8 (21.2)	2184.5 (19.3)	5146.0 (21.2)
Energy	23.3 (15.2)	56.8 (24.3)	157.0 (28.0)	175.4 (38.5)	446.5 (38.3)	1120.2 (38.5)	250.5 (30.0)	1062.1 (28.2)	3460.5 (30.6)	7552.3 (31.2)
Industry and minerals	6.4 (4.2)	12.9 (5.5)	20.8 (3.7)	18.2 (4.0)	41.8 (3.7)	179.0 (6.2)	42.0 (5.0)	430.8 (6.5)	737.5 (6.5)	1489.4 (6.1)
Large and medium industries	3.5 (2.3)	3.8 (1.6)	7.2 (1.3)	14.0 (3.1)	26.9 (2.3)	136.4 (4.7)	25.8 (3.1)	294.9 (4.5)	519.4 (4.6)	1031.6 (4.3)

Appendix IV.2 Contd.

1	2	3	4	5	6	7	8	9	10	11
Village and small industries	2.9 (1.9)	9.1 (3.9)	13.4 (2.4)	3.9 (0.9)	13.4 (1.2)	35.2 (1.2)	14.8 (1.8)	119.8 (1.8)	186.5 (1.6)	399.0 (1.6)
Mining	—	0.1 (0.03)	0.3 (0.04)	0.4 (0.1)	1.5 (0.1)	7.4 (0.3)	1.5 (0.2)	16.1 (0.2)	31.6 (0.3)	58.8 (0.2)
Transport and Communication	6.9 (4.5)	15.4 (6.6)	28.1 (5.0)	16.9 (3.7)	78.0 (6.7)	246.7 (8.5)	85.7 (10.3)	677.9 (10.3)	1158.5 (10.2)	2314.0 (9.6)
Social and Community Services	44.7 (29.2)	46.0 (19.7)	102.9 (18.4)	49.1 (10.8)	148.3 (12.7)	367.3 (12.6)	121.1 (14.5)	1258.7 (19.1)	1785.9 (15.8)	2924.1 (16.2)
Miscellaneous	—	5.3 (2.3)	25.9 (4.6)	10.0 (2.2)	24.7 (2.09)	8.0 (0.3)	12.3 (1.5)	67.9 (1.0)	509.4 (4.5)	663.1 (2.7)
Total	153.4 (100.0)	233.4 (100.0)	560.6 (100.0)	455.3 (100.0)	1165.6 (100.0)	2909.2 (100.0)	833.5 (100.0)	6594.3 (100.0)	11313.6 (100.0)	24218.9 (100.0)

Note : Till Vth Plan energy incorporates only power thereafter including non-convertional energy as well.

Source : State Plan Documents, Government of Uttar Pradesh.

Appendix IV.3 : <u>Ranking of States by Percentage of Industrial Workers to Total Main Workers; Average Daily Number of Workers in Registered Factories and Value Added Per Industrial Worker</u>

States	Percentage of industrial workers to main workers (as per 1981 Census)		Average daily number of workers in registered working factories (per lakh of population) (1986-87)		Value added per industrial worker (in Rupees) (1986-87)	
	Percentage of workers	Rank	Number of workers	Rank	Value added	Rank
Andhra Pradesh	10.3	9	950	7	24350	14
Bihar	6.3	14	347	14	51978	2
Gujarat	15.3	3	1410	1	48281	4
Haryana	12.6	7	1146	5	43743	6
Karnataka	11.9	8	701	8	44003	5
Kerala	16.1	2	659	9	37087	11
Madhya Pradesh	7.9	12	431	11	43289	7
Maharashtra	13.6	6	1253	4	68819	1
Orissa	7.0	13	381	13	37735	10
Punjab	13.9	5	1309	2	32353	13
Rajasthan	9.0	11	415	12	51704	3
Tamil Nadu	15.2	4	1279	3	39309	9
Uttar Pradesh	9.1	10	450	10	41618	8
West Bengal	16.5	1	989	6	32871	12
All India	11.3	-	754	-	44003	-

Source : Draft Eighth Five Year Plan (1990-95) and Annual Plan 1991-92, Vol.I, Govt. of U.P., Planning Department, November 1990.

Appendix IV.4 (A): <u>State-wise Sectoral Contribution to NSDP at Current Prices 1980-81</u>

(Percentage)

States	Primary	Secondary	Tertiary	Total
Andhra Pradesh	46.6	16.6	36.8	100.0
Bihar	NA	NA	NA	--
Gujarat	39.4	28.4	32.2	100.0
Haryana	54.6	19.0	26.4	100.0
Karnataka	43.4	25.0	31.6	100.0
Kerala	39.7	24.6	35.7	100.0
Madhya Pradesh	NA	NA	NA	--
Maharashtra	28.1	35.0	36.9	100.0
Orissa	57.2	13.9	28.9	100.0
Punjab	48.9	19.2	31.9	100.0
Rajasthan	52.2	17.8	30.0	100.0
Tamil Nadu	25.9	33.5	40.6	100.0
Uttar Pradesh	52.0	16.3	31.7	100.0
West Bengal	33.8	30.7	35.5	100.0
All India	41.3	22.9	35.8	100.0

Source : Same as given in Appendix IV.3.

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Appendix IV.4(B)   : <u>State-wise Sectoral Contribution to</u>
<u>NSDP at Current Prices 1988-89</u>

(Percentage)

States	Primary	Secondary	Tertiary	Total
Andhra Pradesh	42.2	16.3	41.5	100.0
Bihar	NA	NA	NA	—
Gujarat	31.4	32.0	36.6	100.0
Haryana	43.6	23.5	32.9	100.0
Karnataka	35.9	28.1	36.0	100.0
Kerala	36.3	23.6	40.1	100.0
Madhya Pradesh	NA	NA	NA	—
Maharashtra	23.6	34.2	42.2	100.0
Orissa	51.8	16.6	31.6	100.0
Punjab	44.8	21.6	33.6	100.0
Rajasthan	NA	NA	NA	—
Tamil Nadu	24.0	30.4	45.6	100.0
Uttar Pradesh	43.1	19.8	37.1	100.0
West Bengal	38.6	25.5	35.9	100.0
All India	36.5	24.1	39.4	100.0

Source : Same as given in Appendix IV.3.

Appendix IV.5 : List of Industry Groups Constituting
                 Consumer and Capital Goods Industries

Industry Group	Constituent Industries
1. Consumer goods	Food products; Sugar, gur and khand-sari; Beverages and tobacco; Cotton textile; Wool, silk and synthetic textile; Jute and mesta; Textile products; Wood and wood products; Paper and paper products and printing; Leather and leather products; Rubber plastic, Petroleum and coal products; and other manufacturing industries (not classified elsewhere).
2. Capital goods	Chemical and chemical products; Non-metallic mineral products; Basic metal and alloys; Metal products (excluding machinery and transport equipment); Machine and equipment (excluding electrical machinery); Electrical machinery; Transport equipment (including parts).

Note : (i) Based on the list as given in R.T. Tewari,
             'Inter-Regional Patterns of Industrialisa-
             tion in India', in R.T. Tewari and A. Joshi
             (eds.) Development and Change in India,
             Ashish Publishing House, New Delhi, 1988,
             pp.69-70.

       (ii) Repair services (97) is excluded from our
             list.

Appendix IV.6(A) : <u>Disaggregated Structure of Industries in U.P. :</u>
<u>Number of Factories</u> (Returns submitted)

Indus- try Code No.	Industry Group	1971 (Number)	Rank	1986-87 (Number)	Rank
0	1	2	3	4	5
20-21	Food products	435 (13.43)	2	1955 (26.15)	1
206 & 7	Sugar, gur and khandsari	477 (14.72	1	1037 (13.87)	2
22	Beverages, tobacco and its products	38 (1.17)	16	72 (0.96)	11
23	Cotton textiles	127 (3.92)	10	258 (3.45)	18
24	Wool, silk & synthe- tic textiles	29 (0.90)	19	55 (0.74)	19
25	Jute and mesta	04 (0.12)	17	18 (0.24)	14
26	Miscellaneous textiles products	58 (1.79)	15	110 (1.47)	15
27	Wood and wood products	27 (0.83)	18	59 (0.79)	17
28	Paper & paper products including printing, publishing & allied activities	244 (7.53)	6	406 (5.43)	7
29	Leather and fur products	71 (2.19)	13	129 (1.73)	13
30	Rubber, plastic, petro- leum & coal products	64 (1.98)	14	316 (4.23)	10
31	Chemical products (ex- cluding coal & petroleum)	178 (5.49)	8	457 (6.11)	5

Appendix IV.6(A) Contd.

0	1	2	3	4	5
32	Non-metallic mineral products	199 (6.14)	7	529 (7.08)	4
33	Basic metal and alloys	341 (10.52)	4	549 (7.34)	3
34	Metal products excluding machinery and transport equipment	399 (12.32)	3	435 (5.82)	6
35	Machine & equipment (excluding electrical machinery)	246 (7.59)	5	397 (5.31)	8
36	Electrical machinery and equipment	136 (4.20)	9	392 (5.24)	9
37	Transport equipment including parts	92 (2.84)	11	207 (2.77)	12
38	Other manufacturing industries	75 (2.32)	12	95 (1.27)	15
	Total Manufacturing	3240 (100.0)	–	7476 (100.0)	–

Note : Data in parenthesis denotes percentage contribution to total manufacturing.

Source : ASI reports of 1971 and 1986-87.

Appendix IV.6(B) : <u>Disaggregated</u> <u>Structure</u> <u>of</u> <u>Industries</u> <u>in</u> <u>U.P.</u> :
<u>Total</u> <u>Employment</u> .

Indus- try Code No.	Industry Group	1971 (Number)	Rank	1986-87 (Number)	Rank
0	1	2	3	4	5
20-21	Food products	19879 (5.75)	7	170399 (24.27)	1
206 & 7	Sugar, gur and khandsari	75926 (21.95)	1	140967 (20.08)	4
22	Beverages, tobacco and its products	5744 (1.66)	14	10589 (1.51)	13
23	Cotton textiles	59170 (17.11)	2	73858 (10.52)	8
24	Wool, silk & synthe- tic textiles	6871 (1.99)	12	14514 (2.07)	12
25	Jute and mesta	109 (0.03)	19	4443 (0.63)	18
26	Miscellaneous textiles products	3176 (0.92)	17	5392 (0.77)	16
27	Wood and wood products	3299 (0.95)	16	2254 (0.32)	19
28	Paper & paper products including printing, publishing & allied activities	17185 (4.97)	9	23413 (3.33)	11
29	Leather and fur products	6378 (1.84)	13	12397 (1.77)	17
30	Rubber, plastic, petroleum & coal products	2451 (o.71)	18	13699 (1.95)	5
31	Chemical products (excluding coal & petroleum)	21256 (6.15)	5	32723 (4.66)	8

Appendix IV.6(B) Contd.

0	1	2	3	4	5
32	Non-metallic mineral products	24359 (7.04)	4	35893 (5.11)	6
33	Basic metal and alloys	20869 (6.03)	6	34029 (4.85)	7
34	Metal products excluding machinery and transport equipment	12190 (3.53)	11	13458 (1.92)	13
35	Machine & equipment (excluding electrical machinery)	12515 (3.62)	10	18179 (2.59)	10
36	Electrical machinery and equipment	18445 (5.33)	8	46660 (6.65)	4
37	Transport equipment including parts	32511 (9.40)	3	44027 (6.27)	5
38	Other manufacturing industries	3527 (1.02)	15	5165 (0.73)	17
	Total Manufacturing	345860 (100.0)	—	702059 (100.0)	—

Note : Data in parenthesis denotes percentage contribution to total manufacturing.

Source : ASI reports of 1971 and 1986-87.

Appendix IV.6(C) : <u>Disaggregated Structure of Industries in U.P. :</u>
<u>Value added</u>

(Rs. in crores)

Indus-try Code No.	Industry Group	1971	Rank	1986-87	Rank
0	1	2	3	4	5
20-21	Food products	10.70 (6.40)	7	231.70 (14.50)	2
206 & 7	Sugar, gur and khandsari	28.04 (16.78)	1	155.92 (9.76)	5
22	Beverages, tobacco and its products	5.12 (3.06)	11	67.92 (4.25)	7
23	Cotton textiles	21.31 (12.75)	3	38.76 (2.43)	13
24	Wool, silk & synthe-tic textiles	4.29 (2.57)	13	40.18 (2.51)	12
25	Jute and mesta	0.03 (0.02)	19	9.20 (0.58)	18
26	Miscellaneous textiles products	1.16 (0.70)	16	12.07 (0.75)	17
27	Wood and wood products	0.80 (0.48)	17	3.36 (0.21)	19
28	Paper & paper products including printing, publishing & allied activities	6.18 (3.70)	9	40.21 (2.52)	11
29	Leather and fur products	2.89 (1.73)	14	18.07 (1.13)	16
30	Rubber, plastic, petroleum & coal products	0.57 (0.34)	18	181.34 (11.35)	3
31	Chemical products (excluding coal & petroleum)	21.58 (12.91)	4	64.77 (4.05)	8

Appendix IV.6(C) Contd.

0	1	2	3	4	5
32	Non-metallic mineral products	6.23 (3.73)	8	49.18 (3.08)	10
33	Basic metal and alloys	11.86 (7.10)	6	131.31 (8.22)	6
34	Metal products excluding machinery and transport equipment	4.85 (2.90)	12	35.05 (2.19)	14
35	Machine & equipment (excluding electrical machinery)	6.04 (3.61)	10	59.53 (3.72)	9
36	Electrical machinery and equipment	11.92 (7.13)	5	275.10 (17.22)	1
37	Transport equipment including parts	21.96 (13.14)	2	164.13 (10.27)	4
38	Other manufacturing industries	1.58 (0.95)	15	20.10 (1.26)	15
	Total Manufacturing	167.11 (100.0)	–	1597.90 (100.0)	–

Note : Data in parentheses denotes percentage
         contribution to total manufacturing.

Source : ASI reports of 1971 and 1986-87.

Appendix IV.6(D) : <u>Disaggregated Structure of Industries in U.P. :</u>
<u>Capital Invested</u>

(Rs. in crores)

Indus-try Code No.	Industry Group	1971	Rank	1986-87	Rank
0	1	2	3	4	5
20-21	Food products	44.91 (5.49)	6	876.35 (15.64)	1
206 & 7	Sugar, gur and khandsari	169.70 (20.73)	1	612.82 (10.94)	4
22	Beverages, tobacco and its products	11.91 (1.45)	12	81.65 (1.46)	13
23	Cotton textiles	116.46 (14.22)	4	295.29 (5.27)	8
24	Wool, silk & synthetic textiles	15.80 (1.93)	9	165.46 (2.95)	12
25	Jute and mesta	0.08 (0.01)	19	26.10 (0.47)	18
26	Miscellaneous textiles products	3.36 (0.41)	14	59.99 (1.07)	16
27	Wood and wood products	11.70 (1.43)	13	12.25 (0.22)	19
28	Paper & paper products including printing, publishing & allied activities	14.91 (1.82)	10	203.75 (3.64)	11
29	Leather and fur products	5.65 (0.69)	16	58.13 (1.04)	17
30	Rubber, plastic, petroleum & coal products	3.56 (0.43)	18	572.26 (10.22)	5
31	Chemical products (excluding coal & petroleum)	153.32 (18.72)	2	716.27 (12.79)	2

Contd..

Appendix IV.6(D) Contd.

0	1	2	3	4	5
32	Non-metallic mineral products	12.82 (1.57)	11	205.08 (3.66)	10
33	Basic metal and alloys	33.09 (4.04)	7	418.92 (7.48)	6
34	Metal products excluding machinery and transport equipment	20.94 (2.56)	8	65.13 (1.16)	15
35	Machine & equipment (excluding electrical machinery)	10.01 (1.22)	15	214.78 (3.83)	9
36	Electrical machinery and equipment	132.09 (16.13)	3	612.90 (10.94)	3
37	Transport equipment including parts	54.51 (6.66)	5	338.58 (6.04)	7
38	Other manufacturing industries	4.00 (0.49)	17	65.87 (1.18)	14
	Total Manufacturing	818.81 (100.0)	–	5601.58 (100.0)	–

Note : Data in parentheses denotes percentage contribution to total manufacturing.

Source : ASI reports of 1971 and 1986-87.

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Appendix V.1 : Composition of Regions

On the basis of similar cropping pattern, population density, geo-physical conditions and agro-climatic factors, the State has been divided into the five economic regions as follows :

    (i)   Western
   (ii)   Central
  (iii)   Eastern
   (iv)   Hill
    (v)   Bundelkhand

Region-wise Differentials in the Indicators of Development in U.P.

Sl.	Item	State/Region					
		State	Western	Central	Eastern	Hill	Bundel-khand
0	1	2	3	4	5	6	7
1.	Area (Percentage) 1981	100.0	27.9	15.6	29.2	17.4	9.9
2.	Population (Percentage) 1981	100.0	35.5	17.7	37.6	4.3	4.9
3.	Density (Sq.km.)	377	479	428	485	95	137
4.	Percentage of area under forest to total reporting area (1986-87)	17.20	4.67	5.19	9.63	63.58	8.13
5.	Area under usar and uncultivable land ('000 ha. 1986-87)	1085.51	266.52	170.60	220.14	298.92	129.33
6.	Per hectare consumption of fertilizer (in kg. for 1987-88)	63.17	76.91	52.03	67.74	43.99	17.10

Appendix V.1 Contd.

0	1	2	3	4	5	6	7
7.	Percentage of net irrigated area to total sown area (1986-87)	57.19	73.84	53.59	55.26	32.82	23.30
8.	Percentage of electrified villages to total inhabited (March 1989)	69.81	79.63	61.27	69.03	66.60	56.91
9.	Length of pucca roads per 100 sq.km. of area (March 1988)	30.44	40.55	31.57	34.14	26.13	20.57
10.	Total literacy (1981)	27.16	28.19	27.72	24.28	39.29	28.69

Source : District-wise indicators of development in
Uttar Pradesh, 1989, The Area Planning
Division, State Planning Institute, Lucknow
and Uttar Pradesh ki Arthik Sameeksha, 1988-
89, Economics and Statistics Division, State
Planning Institute, Lucknow.

Out of these five regions, three regions namely the Eastern,
the Bundelkhand and the Hill have been recognised by the
State Government as relatively backward on account of
consideration like low productivity, high or low density of
population, type of terrain, inadequate infrastructure and
occurrance of floods and drought etc.[*]

* J.C. Budhraja,V.S. Singh and Ramesh Dutta, Regional
   Disparities in U.P. and Proposed Strategies for their
   Reduction, The Area Planning Division, State Planning
   Institute, U.P., Lucknow, p.4.

The list of the districts that are included in each region is given below :

1. Western Region : (1) Agra, (2) Aligarh, (3) Bijnor,
   (Total number of   (4) Badaun, (5) Bareilly, (6) Buland-
   districts - 19)   shahr, (7) Etah, (8) Etawah,
                          (9) Farrukhabad, (10) Mainpuri,
                          (11) Mathura, (12) Meerut,
                          (13) Moradabad, (14) Muzaffarnagar,
                          (15) Rampur, (16) Pilibhit,
                          (17) Saharanpur, (18) Shahjahanpur,
                          (19) Ghaziabad

2. Central Region : (1) Barabanki, (2) Fatehpur,
   (Total number of   (3) Hardoi, (4) Kanpur, (5) Kheri,
   districts - 9)   (6) Lucknow, (7) Rae Bareli,
                         (8) Sitapur, (9) Unnao

3. Eastern Region : (1) Allahabad, (2) Azamgarh,
   (Total number of   (3) Bahraich, (4) Ballia, (5) Basti,
   districts - 15)   (6) Deoria, (7) Faizabad,
                         (8) Ghaziabad, (9) Gonda,
                         (10) Gorakhpur, (11) Jaunpur,
                         (12) Mirzapur, (13) Pratapgarh,
                         (14) Sultanpur, (15) Varanasi

4. Hill Region : (1) Almora, (2) Pithoragarh,
   (Total number of   (3) Dehra Dun, (4) Pauri Garhwal,
   districts - 8)   (5) Chamoli, (6) Nainital,
                         (7) Tehri Garhwal, (8) Uttar Kashi

5. Bundelkhand : (1) Banda, (2) Hamirpur, (3) Jalaun,
   Region   (2) Jhansi, (5) Lalitpur
   (Total number of
   districts - 5)

Appendix V.2(A) : Region-wise Percentage Share of Various
Industry Groups in Total Organised
Industrial Sector in Terms of Variables
Relating to Industrialisation for 1971

(No. of Units)

Indus-try Code No.	Industry Group	Regions				
		Western	Central	Eastern	Hill	Bundel-khand
20-21	Food products	50.45	26.89	16.92	4.54	1.20
206 & 207	Sugar, gur and khandsari	88.59	5.82	5.59	—	—
22	Beverages,tobacco and its products	—	37.50	62.50	—	—
23	Cotton textiles	43.75	38.54	17.71	—	—
24	Wool, silk & synthetic textiles	—	—	70.00	30.00	—
25	Jute and mesta	—	—	100.00	—	—
26	Miscellaneous textiles products	33.33	30.77	35.00	—	—
27	Wood and wood products	100.00	—	—	—	—
28	Paper & paper products including printing, publishing and allied activities	34.39	29.63	33.86	2.12	—
29	Leather and fur products	43.94	56.06	—	—	—
30	Rubber, plastic, petroleum & coal products	71.11	28.89	—	—	—
31	Chemical products (excluding coal & petroleum)	38.40	48.80	6.40	3.20	3.20

Appendix V.2(A) Contd.   (No. of Units)

Industry Code No.	Industry Group	Western	Central	Eastern	Hill	Bundel-khand
32	Non-metallic mineral products	86.45	—	5.81	—	7.74
33	Basic metal and alloys	66.20	21.83	11.97	—	—
34	Metal products excluding machinery and transport equipment	71.90	26.86	1.24	—	—
35	Machine & equipment excluding electrical machinery	74.75	18.43	5.80	—	1.02
36	Electrical machinery & equipment	40.60	19.80	28.71	10.89	—
37	Transport equipment including parts	26.56	59.38	14.06	—	—
38	Other manufacturing industries	35.90	38.46	12.82	12.82	—
97	Repair of vehicles and cycles	28.57	38.96	18.18	14.29	—
	Rest of the industries	47.22	19.16	24.60	6.92	2.10

Source : ASI Report of 1971.

Appendix V.2(A) Contd.

| | | | | | | (Employment) |

Indus-try Code No.	Industry Group	Regions				
		Western	Central	Eastern	Hill	Bundel-khand
20-21	Food products	55.61	28.57	10.99	3.81	1.01
206 & 207	Sugar, gur and khandsari	64.88	6.88	28.24	—	—
22	Beverages,tobacco and its products	—	57.06	42.94	—	—
23	Cotton textiles	22.07	76.72	1.21	—	—
24	Wool, silk & synthetic textiles	—	—	63.94	36.06	—
25	Jute and mesta	—	—	100.00	—	—
26	Miscellaneous textiles products	12.03	21.16	66.81	—	—
27	Wood and wood products	100.00	—	—	—	—
28	Paper & paper products including printing, publishing and allied activities	22.30	34.86	40.13	2.71	—
29	Leather and fur products	20.87	79.13	—	—	—
30	Rubber, plastic, petroleum & coal products	51.26	48.74	—	—	—
31	Chemical products (excluding coal & petroleum)	34.50	30.37	10.56	23.15	1.42

Appendix V.2(A) Contd.

                                                              (Employment)

Indus-try Code No.	Industry Group	Regions				
		Western	Central	Eastern	Hill	Bundel-khand
32	Non-metallic mine-ral products	90.94	—	7.25	—	1.81
33	Basic metal and alloys	60.59	21.46	17.95	—	—
34	Metal products excluding machi-nery and transport equipment	73.42	25.75	0.83	—	—
35	Machine & equip-ment excluding electrical machinery	66.77	27.73	5.12	—	0.38
36	Electrical machi-nery & equipment	27.96	28.09	33.82	10.13	—
37	Transport equip-ment including parts	23.26	37.70	39.04	—	—
38	Other manufactu-ring industries	42.77	34.81	11.38	11.04	—
97	Repair of vehicles and cycles	43.66	21.04	19.34	15.96	—
	Rest of the industries	42.22	22.93	24.67	4.57	4.90

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Appendix V.2(A) Contd.

(Value Added)

Indus-try Code No.	Industry Group	Regions				
		Western	Central	Eastern	Hill	Bundel-khand
32	Non-metallic mineral products	91.50	–	9.05	–	–
33	Basic metal and alloys	74.95	17.39	7.66	–	–
34	Metal products excluding machinery and transport equipment	77.91	21.66	0.43	–	–
35	Machine & equipment excluding electrical machinery	58.17	38.09	3.44	–	0.30
36	Electrical machinery & equipment	43.67	36.77	16.46	3.10	–
37	Transport equipment including parts	13.07	8.25	78.68	–	–
38	Other manufacturing industries	52.46	25.42	9.36	12.76	–
97	Repair of vehicles and cycles	43.60	17.81	23.55	15.04	–
	Rest of the industries	48.91	19.59	24.91	4.16	2.43

Appendix V.2(B) : <u>Region-wise Percentage Share of Various</u> <u>Industry Groups in Total Organised</u> <u>Industrial Sector in Terms of Variables</u> <u>relating to Industrialisation for 1980-81</u>

(No. of Units)

Indus-try Code No.	Industry Group	Regions				
		Western	Central	Eastern	Hill	Bundel-khand
20-21	Food products	54.22	26.03	13.49	5.54	0.72
206 & 207	Sugar, gur and khandsari	91.97	4.31	2.74	0.98	—
22	Beverages, tobacco and its products	—	100.00	—	—	—
23	Cotton textiles	59.84	23.62	16.54	—	—
24	Wool, silk & synthetic textiles	25.93	—	74.07	—	—
25	Jute and mesta	—	—	—	—	—
26	Miscellaneous textiles products	17.24	13.79	68.97	—	—
27	Wood and wood products	100.00	—	—	—	—
28	Paper & paper products including printing, publishing and allied activities	43.09	29.27	24.80	1.22	1.62
29	Leather and fur products	48.11	51.89	—	—	—
30	Rubber, plastic, petroleum & coal products	61.94	30.60	7.46	—	—
31	Chemical products (excluding coal & petroleum)	46.77	38.31	8.46	4.97	1.49

Appendix V.2(B) Contd.

(No. of Units)

Indus-try Code No.	Industry Group	Regions				
		Western	Central	Eastern	Hill	Bundel-khand
32	Non-metallic mineral products	92.70	0.97	4.14	—	2.19
33	Basic metal and alloys	68.54	26.76	3.29	—	1.41
34	Metal products excluding machinery and transport equipment	63.08	28.00	8.92	1.60	—
35	Machine & equipment excluding electrical machinery	69.01	20.12	9.27	1.60	—
36	Electrical machinery & equipment	37.42	19.63	22.70	20.25	—
37	Transport equipment including parts	40.00	57.27	2.73	—	—
38	Other manufacturing industries	52.31	33.85	6.15	7.69	—
97	Repair of vehicles and cycles	21.30	37.96	24.07	16.67	—
	Rest of the industries	44.57	20.68	24.61	7.86	2.28

Source : ASI Report of 1980-81.

Appendix V.2(B) Contd.

<div align="right">(Employment)</div>

Indus- try Code No.	Industry Group	Regions				
		Western	Central	Eastern	Hill	Bundel- khand
20-21	Food products	63.59	22.73	7.64	5.55	0.49
206 & 207	Sugar, gur and khandsari	65.74	6.77	23.61	3.88	—
22	Beverages, toba- cco and its products	—	100.00	—	—	—
23	Cotton textiles	33.76	64.98	1.26	—	—
24	Wool, silk & syn- thetic textiles	33.54	—	66.46	—	—
25	Jute and mesta	—	—	—	—	—
26	Miscellaneous textiles products	27.76	2.66	69.58	—	—
27	Wood and wood products	100.00	—	—	—	—
28	Paper & paper products including printing, publi- shing and allied activities	41.95	24.02	28.62	5.12	0.29
29	Leather and fur products	28.49	71.51	—	—	—
30	Rubber, plastic, petroleum & coal products	76.05	21.49	2.46	—	—
31	Chemical products (excluding coal & petroleum)	30.17	30.36	17.97	19.31	2.19

Appendix V.2(B) Contd.

<div align="right">(Employment)</div>

Indus- try Code No.	Industry Group	Regions				
		Western	Central	Eastern	Hill	Bundel- khand
32	Non-metallic mine- ral products	93.60	0.65	4.78	—	0.97
33	Basic metal and alloys	65.30	23.42	9.36	—	1.92
34	Metal products excluding machi- nery and transport equipment	68.98	23.23	7.79	—	—
35	Machine & equip- ment excluding electrical machinery	65.95	24.32	8.87	0.86	—
36	Electrical machi- nery & equipment	57.90	16.57	22.21	3.32	—
37	Transport equip- ment including parts	30.55	68.97	0.48	—	—
38	Other manufactu- ring industries	44.86	50.46	3.28	1.40	—
97	Repair of vehicles and cycles	24.58	36.34	22.11	16.97	—
	Rest of the industries	37.80	24.18	30.09	3.40	4.53

Appendix V>2(B) Contd.

				(Value Added)		
Indus-try Code No.	Industry Group	Regions				
		Western	Central	Eastern	Hill	Bundel-khand
20-21	Food products	73.89	16.21	4.33	5.55	0.02
206 & 207	Sugar, gur and khandsari	50.80	10.46	29.96	8.78	—
22	Beverages,tobacco and its products	—	100.00	—	—	—
23	Cotton textiles	35.70	63.87	0.43	—	—
24	Wool, silk & synthetic textiles	30.92	—	69.08	—	—
25	Jute and mesta	—	—	—	—	—
26	Miscellaneous textiles products	21.95	1.80	76.25	—	—
27	Wood and wood products	100.00	—	—	—	—
28	Paper & paper products including printing, publishing and allied activities	39.32	39.57	18.28	2.67	0.16
29	Leather and fur products	30.79	69.21	—	—	—
30	Rubber, plastic, petroleum & coal products	92.83	6.67	0.50	—	—
31	Chemical products (excluding coal & petroleum)	37.10	28.57	-1.18	35.05	0.46

Appendix V.2(B) Contd.

(Value Added)

Indus-try Code No.	Industry Group	Regions				
		Western	Central	Eastern	Hill	Bundel-khand
32	Non-metallic mineral products	79.43	2.21	18.45	—	-0.09
33	Basic metal and alloys	74.02	17.38	7.00	—	1.60
34	Metal products excluding machinery and transport equipment	81.06	13.02	5.92	—	—
35	Machine & equipment excluding electrical machinery	63.13	29.09	6.78	1.00	—
36	Electrical machinery & equipment	73.91	5.98	19.49	0.62	—
37	Transport equipment including parts	32.58	67.13	0.29	—	—
38	Other manufacturing industries	68.01	26.12	4.40	1.47	—
97	Repair of vehicles and cycles	30.69	34.03	15.78	19.50	—
	Rest of the industries	35.99	21.27	35.06	2.98	4.70

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Appendix V.2(C) : Region-wise Percentage Share of Various Industry Groups in Total Organised Industrial Sector in Terms of Variables relating to Industrialisation for 1986-87

(No. of Units)

Industry Code No.	Industry Group	Regions				
		Western	Central	Eastern	Hill	Bundel-khand
20-21	Food products	45.60	21.50	11.01	20.98	0.91
206 & 207	Sugar, gur and khandsari	89.00	7.33	2.28	1.39	–
22	Beverages, tobacco and its products	62.50	37.50	–	–	–
23	Cotton textiles	67.34	20.10	11.05	1.51	–
24	Wool, silk & synthetic textiles	13.64	40.91	45.45	–	–
25	Jute and mesta	–	100.00	–	–	–
26	Miscellaneous textiles products	61.84	–	38.16	–	–
27	Wood and wood products	61.11	–	22.22	16.67	–
28	Paper & paper products including printing, publishing and allied activities	57.40	22.66	16.01	2.72	1.21
29	Leather and fur products	36.13	63.87	–	–	–
30	Rubber, plastic, petroleum & coal products	72.76	14.18	7.46	5.60	–
31	Chemical products (excluding coal & petroleum)	52.69	30.84	6.29	9.28	0.90

Appendix V.2(C) Contd.

(No. of Units)

Indus- try Code No.	Industry Group	Regions				
		Western	Central	Eastern	Hill	Bundel- khand
32	Non-metallic mine- ral products	82.33	4.25	8.50	--	4.92
33	Basic metal and alloys	71.51	21.51	5.58	0.60	0.80
34	Metal products excluding machi- nery and transport equipment	67.04	24.10	8.86	--	--
35	Machine & equip- ment excluding electrical machinery	72.02	18.01	9.97	--	--
36	Electrical machi- nery & equipment	59.65	14.62	17.84	7.89	--
37	Transport equip- ment including parts	63.35	36.65	--	--	--
38	Other manufactu- ring industries	60.00	33.33	6.67	--	--
97	Repair of vehicles and cycles	28.86	26.17	30.20	10.74	4.03
	Rest of the industries	42.03	20.00	26.53	7.97	3.47

Source : ASI Report of 1986-87.

Appendix V.2(C) Contd.

(Employment)

Indus-try Code No.	Industry Group	Regions				
		Western	Central	Eastern	Hill	Bundel-khand
20-21	Food products	53.58	17.33	9.00	19.41	0.68
206 & 207	Sugar, gur and khandsari	74.48	11.81	9.85	3.86	--
22	Beverages, tobacco and its products	68.38	31.62	--	--	--
23	Cotton textiles	22.28	61.33	9.39	7.00	--
24	Wool, silk & synthetic textiles	16.42	60.83	22.75	--	--
25	Jute and mesta	--	100.00	--	--	--
26	Miscellaneous textiles products	61.15	--	38.85	--	--
27	Wood and wood products	71.24	--	5.75	23.01	--
28	Paper & paper products including printing, publishing and allied activities	46.47	18.06	24.58	10.69	0.20
29	Leather and fur products	42.13	57.87	--	--	--
30	Rubber, plastic, petroleum & coal products	85.00	6.90	4.04	4.06	--
31	Chemical products (excluding coal & petroleum)	39.09	22.40	15.27	21.36	1.88

Appendix V.2(C) Contd.

Indus- try Code No.	Industry Group	Regions				
		Western	Central	Eastern	Hill	Bundel- khand
32	Non-metallic mineral products	78.53	2.60	17.38	—	1.49
33	Basic metal and alloys	65.88	18.68	14.47	0.21	0.76
34	Metal products excluding machinery and transport equipment	71.79	22.02	6.19	—	—
35	Machine & equipment excluding electrical machinery	71.27	17.91	10.82	—	—
36	Electrical machinery & equipment	56.50	20.28	20.32	2.90	—
37	Transport equipment including parts	54.72	45.28	—	—	—
38	Other manufacturing industries	48.81	46.98	4.21	—	—
97	Repair of vehicles and cycles	20.48	43.11	20.92	12.40	3.09
	Rest of the industries	30.39	25.25	33.51	3.86	6.99

Appendix V.2(C) Contd.

(Value Added)

Indus-try Code No.	Industry Group	Regions				
		Western	Central	Eastern	Hill	Bundel-khand
20-21	Food products	61.67	15.02	6.39	16.42	0.50
206 & 207	Sugar, gur and khandsari	47.94	18.60	24.33	9.13	—
22	Beverages, tobacco and its products	74.77	25.23	—	—	—
23	Cotton textiles	37.80	47.87	8.57	5.76	—
24	Wool, silk & synthetic textiles	4.52	91.74	3.74	—	—
25	Jute and mesta	—	100.00	—	—	—
26	Miscellaneous textiles products	50.59	—	49.41	—	—
27	Wood and wood products	88.12	—	2.32	9.56	—
28	Paper & paper products including printing, publishing and allied activities	62.99	32.41	13.75	-9.88	0.73
29	Leather and fur products	30.56	69.44	—	—	—
30	Rubber, plastic, petroleum & coal products	96.23	2.67	0.71	0.39	—
31	Chemical products (excluding coal & petroleum)	156.61	-104.68	26.14	19.52	2.41

Appendix V.2(C) Contd.   ,

                                                        (Value Added)

Indus-try Code No.	Industry Group	Regions				
		Western	Central	Eastern	Hill	Bundel-khand
32	Non-metallic mineral products	62.05	0.01	36.02	—	1.92
33	Basic metal and alloys	57.39	19.95	22.32	0.09	0.25
34	Metal products excluding machinery and transport equipment	80.59	16.50	2.91	—	—
35	Machine & equipment excluding electrical machinery	68.13	24.54	7.33	—	—
36	Electrical machinery & equipment	58.80	19.56	21.04	0.60	—
37	Transport equipment including parts	103.25	-3.35	—	—	—
38	Other manufacturing industries	65.14	30.83	4.03	—	—
97	Repair of vehicles and cycles	71.51	14.14	10.37	3.07	0.91
	Rest of the industries	31.75	13.15	48.05	3.20	3.85

Source : ASI Reports for 1986-87.

Appendix   V.3 :   District-wise Composite Indices   of Indus-
              trialisation (CII) in U.P.   1971, 1980-81
              and 1986-87   .

Districts	1971		1980-81		1986-87	
	C.I.I.	Rank	C.I.I.	Rank	C.I.I.	Rank
0	1	2	3	4	5	6
Agra	701.70	1	284.74	4	203.53	7
Mainpuri	61.96	21	55.10	25	45.29	26
Aligarh	150.78	10	118.40	11	86.36	17
Bareilly	134.39	11	113.85	13	89.58	16
Badaun	22.06	44	21.22	44	14.93	45
Bulandshahr	53.12	29	72.17	18	77.22	18
Etah	48.30	31	35.00	35	34.08	33
Etawah	73.76	16	45.98	29	28.02	36
Farukhabad	53.28	28	31.25	37	39.73	28
Mathura	61.82	22	66.92	23	382.34	2
Meerut	369.51	3	213.28	6	228.41	6
Moradabad	87.06	15	103.09	14	110.14	14
Pilibhit	43.29	33	44.61	30	46.94	25
Rampur	72.77	17	73.11	17	73.49	20
Muzaffarnagar	169.68	9	205.49	7	172.66	8
Saharanpur	183.61	6	223.69	5	151.55	10
Bijnore	118.01	13	163.19	9	117.63	12
Shahjahanpur	65.90	20	59.86	24	60.65	23
Ghaziabad	369.51	4	657.52	2	604.04	1
Barabanki	34.81	35	35.65	34	29.21	35
Fatehpur	25.84	42	33.49	36	36.32	30
Hardoi	33.25	37	10.43	47	16.51	44
Kanpur	598.56	2	297.31	3	244.03	3
Kheri	58.13	23	63.64	22	50.06	24
Lucknow	313.75	5	716.23	1	237.78	4
Sitapur	52.68	30	36.84	33	34.43	32
Unnao	37.69	34	80.52	16	72.82	21
Allahabad	126.77	12	116.40	12	106.13	15
Azamgarh	25.27	43	46.15	28	26.77	37
Ballia	7.35	48	-192.11	48	19.40	42
Bahraich	26.06	41	22.51	42	16.94	43
Basti	27.57	40	23.64	41	22.75	39
Deoria	54.49	27	39.41	31	37.48	29
Faizabad	32.37	38	37.39	32	42.61	27
Ghazipur	57.15	24	29.92	38	22.38	40
Gonda	32.29	39	26.03	40	33.81	34

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Appendix V.3 Contd.

0	1	2	3	4	5	6
Gorakhpur	97.84	14	64.71	21	61.90	22
Jaunpur	33.63	36	12.39	45	21.97	41
Mirzapur	70.18	19	70.26	19	228.85	5
Pratapgarh	8.14	47	22.11	43	11.23	48
Sultanpur	56.84	25	52.52	27	35.91	31
Varanasi	173.38	8	143.19	10	133.84	11
Almora	15.25	45	53.06	26	24.87	38
Dehra Dun	183.55	7	178.59	8	114.54	13
Garhwal	44.84	32	26.38	39	12.50	46
Nainital	72.07	18	66.06	20	164.96	9
Banda	13.55	46	12.30	46	11.63	47
Jhansi	54.91	26	83.99	15	74.01	19
Coefficient of variations	1.29		1.45		1.15	

Source :   ASI Reports of 1971, 1980-81 and 1986-87.

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Appendix V.4 : Results Based on Normative Approach 1971, 1980-81 and 1986-87

Districts	1971			1980-81			1986-87		
	First Criterion	Second Criterion	Both Criterion	First Criterion	Second Criterion	Both Criterion	First Criterion	Second Criterion	Both Criterion
O	1	2	3	4	5	6	7	8	9
Agra	23.4 +	11.1 +	A	27.1 +	14.0 +	A	35.0 +	10.4 +	A
Mainpuri	11.2 +	2.6 -	B	16.2 +	2.4	B	11.8 +	2.8 -	B
Aligarh	10.8 +	4.7 -	B	18.2 +	4.6 -	B	26.3 +	3.2 -	B
Bareilly	24.4 +	7.3 -	B	21.4 +	8.5 -	B	25.3 +	7.0 -	B
Badaun	2.2 -	0.7 -	D	3.1 -	1.4	D	6.2 -	0.8 -	D
Bulandshahr	9.5 -	1.5 -	D	14.5 +	3.4 -	B	17.4 +	3.4 -	B
Etah	9.9 -	0.8 -	D	8.6 -	1.1 -	D	18.8 +	0.5 -	B
Etawah	4.6 -	0.9 -	D	9.1 -	1.5 -	D	13.2 +	1.1 -	B
Farukhabad	5.1 -	0.7 -	D	5.9 -	1.6 -	D	12.1 +	1.4 -	B
Mathura	6.8 -	1.7 -	D	13.5 +	3.1 -	B	54.5 +	2.2 -	B
Meerut	34.8 +	14.9 +	A	25.5 +	11.3 +	A	47.4 +	8.6 -	B
Moradabad	9.8 -	3.4 -	D	11.1 +	7.4 -	B	20.0 +	6.7 -	B
Pilibhit	5.9 -	3.6 -	D	5.4 -	7.1 -	D	9.8 -	4.1 -	D
Rampur	8.4 -	4.7 -	D	8.4 -	8.2 -	D	20.1 +	5.0 -	B
Muzaffarnagar	1.2 -	6.9 -	D	10.1 +	15.3 +	A	17.4 +	9.3 -	B
Saharanpur	19.2 +	10.4 +	A	32.0 +	15.3 +	A	44.8 +	11.0 +	A
Bijnore	14.0 +	6.8 -	B	14.7 +	15.0 +	A	22.7 +	10.9 +	A
Shahjahanpur	3.9 -	5.6 -	D	3.9 -	5.6 -	D	7.0 -	6.8 -	D
Ghaziabad	(-)	(-)	(-)	54.2 +	31.9 +	A	62.7 +	30.3 +	A

Appendix V.4 Contd.

0	1	2	3	4	5	6	7	8	9
Barabanki	10.5+	0.7−	B	13.0+	2.8−	B	25.2+	1.8−	B
Fatehpur	4.6−	0.3−	D	6.2−	0.6−	D	8.2−	0.7	D
Hardoi	6.2−	0.5−	D	2.7−	1.4−	D	11.2+	1.2−	B
Kanpur	37.0+	30.4+	A	35.4+	20.7+	A	38.8+	16.5+	A
Kheri	6.2−	2.1−	D	4.6−	0.5−	D	9.7−	5.0−	D
Lucknow	2.8−	14.2+	C	48.6+	11.9+	A	54.4+	13.0+	A
Sitapur	8.7−	2.8−	D	8.8−	3.1−	D	17.8+	2.4−	B
Unnao	4.2−	1.6−	D	12.8+	1.8−	B	14.1+	1.7−	B
Allahabad	17.9+	6.2−	B	28.4+	6.6−	B	41.4+	6.3−	B
Azamgarh	1.9−	0.6−	D	16.8+	1.0−	B	18.2+	1.3−	B
Ballia	6.0−	0.2−	D	4.3−	0.8−	D	9.6−	0.5−	D
Bahraich	2.2+	0.9−	B	2.5−	0.8−	D	4.2−	0.3−	D
Basti	6.4+	0.9−	D	5.8−	2.0−	D	9.7−	0.9−	D
Deoria	9.2−	2.9−	D	7.8−	6.4−	D	12.2+	2.0−	B
Faizabad	10.0+	0.7−	B	11.7+	1.4−	B	13.2+	1.7−	B
Ghazipur	9.1−	0.5−	D	11.9+	1.0−	B	11.8+	0.8−	B
Gonda	5.5−	1.5−	D	1.4−	4.5−	D	7.9−	1.0−	D
Gorakhpur	11.0+	5.7−	B	11.9+	6.2−	B	15.5+	4.4−	B
Jaunpur	5.9−	0.5−	D	4.6−	0.7−	D	8.7−	0.5−	D
Mirzapur	31.0+	2.9−	B	29.9+	5.6−	B	39.9+	6.3−	B
Pratapgarh	4.0−	0.1−	D	14.9+	0.1−	B	8.7−	0.7	D
Sultanpur	8.3−	0.8−	D	4.5−	0.1−	D	10.6+	0.5−	B

Appendix V.4 Contd.

0	1	2	3	4	5	6	7	8	9
Varanasi	39.4 +	4.7 -	B	41.2 +	4.8 -	B	50.6 +	4.7 -	B
Almora	1.8 -	0.3 -	D	4.9 -	0.8 -	D	9.4 -	0.9 -	D
Dehra Dun	2.6 -	15.1 +	C	30.9 +	11.7 +	A	21.2 +	11.3 +	A
Garhwal	1.6 -	0.1 -	D	2.9 -	0.4 -	D	3.0 -	0.4 -	D
Nainital	8.6 -	4.0 -	D	7.8 -	10.4 +	C	11.4 +	13.4 +	A
Banda	5.9 -	0.2 -	D	5.1 -	0.1 -	D	6.6 -	0.6 -	D
Jhansi	14.2 +	5.4 -	B	29.1 +	5.7 -	B	43.0 +	6.4 -	B

Note : First Criterion = At least 15 per cent contribution of manufacturing
                            to NDP.

       Second Criterion = At least 10 per cent contribution of manufacturing
                            to total employment.

          (+)   = State passes the criteria

          (-)   = State fails the criteria

           A   = State passes both the criterion

           B   = State passes only first criterion

           C   = State passes only second criterion

           D   = State fails both the criterion

  Source : (i) First criterion - District Domestic Net Output, (U.P.)
            Commodity Producing Sectors, Economics and Statistics
            Division, State Planning Institute, Lucknow, relevant
            issues;

            (ii) Second criterion - Annual Survey of Industries,
            Economics and Statistics Division, State Planning
            Institute, Lucknow, (relevant issues).

Appendix V. 5 : <u>List of Backward Districts of Uttar Pradesh</u>
<u>(Based on Central Capital Subsidy Scheme)</u>

Category A	Category B	Category C
1. Banda*	1. Ballia	1. Azamgarh
2. Fatehpur*	2. Basti	2. Badaun
3. Hamirpur*	3. Faizabad	3. Bahraich
4. Jalaun*	4. Jhansi	4. Barabanki
5. Jaunpur*	5. Rae Bareli	5. Bulandshahr
6. Sultanpur*	6. Lalitpur	6. Deoria
7. Kanpur Dehat*		7. Etah
8. Almora		8. Etawah
9. Chamoli*		9. Farrukhabad
10. Pauri Garhwal*		10. Ghazipur
11. Tehri Garhwal*		11. Gonda
12. Pithoragarh		12. Hardoi
13. Uttar Kashi*		13. Mainpuri
14. Dehra Dun		14. Mathura
15. Naini Tal		15. Moradabad
		16. Pilibhit
		17. Pratapgarh
		18. Rampur
		19. Shahjahanpur
		20. Sitaput
		21. Unnao

* (1) No industry district.

Source : Government of Uttar Pradesh, Draft Annual Plan, 1987-88, Vol.II, p.168.

Appendix V.6 : <u>List of Backward Districts in Uttar Pradesh :
1986-87 (Based on the Present Study)</u>

1. Chamoli	25. Sultanpur
2. Tehri Garhwal	26. Fatehpur
3. Uttar Kashi	27. Deoria
4. Lalitpur	28. Farrukhabad
5. Hamirpur	29. Faizabad
6. Pratapgarh	30. Mainpuri
7. Pithoragarh	31. Pilibhit
8. Banda	32. Kheri
9. Jalaun	33. Shahjahanpur
10. Pauri Garhwal	34. Gorakhpur
11. Badaun	35. Rae Bareli
12. Hardoi	36. Unnao
13. Bahraich	37. Rampur
14. Ballia	38. Jhansi
15. Jaunpur	39. Bulandshahr
14. Ghazipur	40. Aligarh
17. Basti	41. Barielly
18. Almora	42. Allahabad
19. Azamgarh	43. Moradabad
20. Etawah	44. Dehra Dun
21. Barabanki	45. Varanasi
22. Gonda	46. Naini Tal
23. Etah	47. Muzaffarnagar
24. Sitapur	48. Mathura

Note   : Kanpur Dehat is not considered in our exercise.
Source : Based on Appendices V.3, V.4 and V.5.

Appendix V.7 : <u>District-wise</u> <u>Industrial</u> <u>Base</u> <u>in</u>
<u>Uttar</u> <u>Pradesh</u> : 1986-87

District	Industries with $I_{ij} > 1$
Almora (1)	Chemical and chemical products (6.10)
Dehra Dun (8)	Paper products and printing (2.40), Chemical and chemical products (11.42), Electrical machinery (1.23), Repair of vehicles and cycles (2.56)
Pauri Garhwal (1)	Food products (8.81)
Nainital (9)	Food products (5.71), Sugar (1.23), Cotton textiles (2.24), Wood products (7.30), Paper products and printing (2.13), Rubber and coal products (1.16), Repair of vehicles and cycles (2.60)
Banda (1)	Food products (2.90)
Hamirpur (2)	Non-metallic mineral products (3.88), Repair of vehicles and cycles (44.34)
Allahabad (11)	Cotton textiles (1.84), Paper products and printing (3.45), Non-metallic mineral products (1.25), Basic metal and alloys (1.86), Electrical machinery (3.71), Repair of vehicles and cycles (2.59)
Azamgarh (6)	Cotton textiles (1.24), Repair of vehicles and cycles (4.70)
Bahraich (1)	Food products (9.23)
Basti (1)	Rubber and coal products (3.91)
Deoria (1)	Sugar (4.39)
Faizabad (3)	Food products (1.60), Non-metallic mineral products (1.47)
Gonda (1)	Food products (2.22), Sugar (3.04)
Gorakhpur (9)	Wood products (1.80), Paper and printing (1.59), Chemical and chemical products (2.42), Basic metal and alloys (1.77), Repair of vehicles and cycles (1.71)

Appendix V.7 Contd.

District	Industries with $I_{ij} > 1$
Jaunpur (2)	Basic metal and alloys (1.83), Non-electrical machinery (4.19)
Mirzapur (4)	Non-metallic mineral products (3.38), Non-electrical machinery (1.00), Miscellaneous textile products (4.47)
Varanasi (13)	Wool and silk textiles (6.80), Miscellaneous textile products (8.16), Paper products and printing (1.27), Chemical and chemical products (1.44), Non-electrical machinery (1.61), Electrical products (1.12), Repair of vehicles and cycles (1.52)
Agra (14)	Miscellaneous textiles products (1.39), Leather and leather products (7.24) Non-metallic mineral products (9.34), Basic metal and alloys (2.20), Non-electrical machinery (2.60), Repair of vehicles and cycles (1.56)
Mainpuri (4)	Food products (3.92), Paper products and printing (1.03), Non-metallic mineral products (7.31)
Aligarh (13)	Food products (2.51), Miscellaneous textile products (20.16), Paper products and printing (3.35), Non-metallic mineral products (2.02), Basic metal and alloys (1.08), Metal products except machinery and transport equipment (3.03), Transport equipment (2.80), Repair of vehicles and cycles (2.41)
Barielly (6)	Food products (1.41), Sugar (1.38), Chemical and chemical products (4.33), Repair of vehicles and cycles (1.40)
Bulandshahr (8)	Paper products and printing (1.57), Non-metallic mineral products (1.87), Basic metal and alloys (1.17)
Etah (2)	Metal products except machinery and transport equipment (3.07)

Appendix V.7 Contd.

District	Industries with $I_{ij} > 1$
Mathura (7)	Miscellaneous textiles products (2.91), Basic metal and alloys (2.81), Metal products except machinery and transport equipments (7.39)
Meerut[*] (13)	Beverages and tobacco (4.70), Cotton textiles (1.31), Wool and silk textiles (1.08), Miscellaneous textile products (3.11), Wood products (2.30), Rubber and coal products (4.74), Chemical and chemical products (1.28), Basic metal and alloys (2.21), Metal products except machinery and transport equipment (2.27), Non-electrical machinery (3.15), Electrical machinery (1.61), Transport equipments (3.12)
Moradabad (9)	Sugar (3.40), Metal products except machinery and transport equipment (3.34)
Pilibhit (1)	Food products (1.95), Sugar (4.04)
Rampur (6)	Wood products (31.60), Paper products and printing (2.91)
Muzafffarnagar (10)	Sugar (3.41), Paper products and printing (1.02), Basic metal and alloys (1.85)
Saharanpur (11)	Food products (1.48), Sugar (1.20), Basic metal and alloys (1.15), Paper products and printing (2.21), Electrical machinery (4.99)
Bijnor (5)	Sugar (4.10)
Shahjahanpur (2)	Food products (4.35), Sugar (2.92)
Barabanki (2)	Leather and leather products (2.38)
Fatehpur (1)	Food products (13.99)

Appendix V.7 Contd.

District	Industries with $I_{ij} > 1$
Kanpur (17)	Cotton textiles (5.20), Wool and silk textiles (4.40), Jute textiles (8.43), Leather and leather products (4.24), Chemical and chemical products (1.28), Metal products except machinery and transport equipment (1.61), Non-electrical machinery (1.48), Repair of vehicles and machinery (2.74)
Sitapur (3)	Food products (1.25), Sugar (3.20)
Unnao (6)	Wool and silk textiles (17.56), Paper product and printing (1.02), Leather and leather products (11.63), Chemical and chemical products (3.29), Basic metal and alloys (4.67), Metal products except machinery and transport equipment (1.51)
Kheri (1)	Sugar (4.40)
Lucknow (14)	Beverages and tobacco (6.70), Paper products and printing (2.93), Chemical and chemical products (1.12), Basic metal and alloys (1.40), Transport equipments (8.11), Repair of vehicles and cycles (2.74)

Note : (i) Figures in parentheses against the district name denote the number of major industry groups for which information is available; those against the names of industry groups are the respective I_{ij} (location quotient).

(ii) * Including Ghaziabad.

(iii) Districts namely; Pithoragarh, Tehri Garhwal, Etawah, Badaun, Hardoi, Rae Bareli Jalaun, Jhansi, Lalitpur, Ballia, Ghazipur, Pratapgarh and Sultanpur have been excluded as they have industrial units only in the category of 'Rest of the industries' for which no specific industry group-wise data is available. There is no information for Chamoli and Uttar Kashi for the year 1986-87; those the names of industry-groups are the respective I_{ij}s (location quotient).

Source : ASI Report of 1986-87.

Appendix VI.1 : Region-wise/District-wise Indices of Indus-
trialisation (CII), Human Development (HDI),
and Economic Infrastructure with Real GDP
Per Capita

Reions	CII (1986-87)	HDI (1981)	Real GDP/ Capital(Rs.) (1986-87)	Index of Economic In- frastructure (1990)
0	1	2	3	4
Western				
1. Agra	203.53	.470	347.70	129.088
2. Aligarh	86.36	.360	482.02	146.834
3. Bijnor	117.63	.400	584.58	120.970
4. Badaun	14.93	.020	459.53	94.252
5. Bareilly	89.58	.265	468.24	112.183
6. Bulandshahr	77.22	.410	798.81	152.299
7. Etah	34.08	.285	491.55	116.424
8. Etawah	28.02	.480	421.29	100.323
9. Farrukhabad	39.73	.425	431.50	119.524
10. Mainpuri	45.29	.400	430.73	114.114
11. Mathura	382.34	.370	852.88	137.630
12. Meerut	228.41	.570	764.91	165.119
13. Moradabad	110.14	.245	464.12	98.260
14. Muzaffarnagar	172.66	.500	618.86	163.041
15. Rampur	73.49	.220	530.28	135.622
16. Pilibhit	46.94	.240	668.35	92.396
17. Saharanpur	151.55	.545	748.47	128.365
18. Shahjahanpur	60.65	.145	462.99	78.153
19. Ghaziabad	604.04	.585	935.11	161.066

Appendix VI.1 Contd.

0	1	2	3	4
Central				
1. Hardoi	16.51	.115	364.31	74.674
2. Barabanki	29.21	.210	432.88	73.161
3. Sitapur	34.43	.115	342.36	79.482
4. Fatehpur	36.32	.240	363.80	100.020
5. Kheri	50.06	.270	462.72	89.532
6. Rae Bareli	66.04	.165	453.47	135.659
7. Unnao	72.82	.275	362.99	87.509
8. Lucknow	237.78	.650	358.69	137.589
9. Kanpur	244.03	.710	401.26	98.951
Eastern				
1. Pratapgarh	11.23	.280	273.91	108.689
2. Bahraich	16.94	.120	275.06	81.994
3. Ballia	19.40	.630	262.27	155.785
4. Jaunpur	21.97	.370	256.85	147.725
5. Ghazipur	22.38	.485	321.39	146.018
6. Basti	22.75	.075	263.47	76.894
7. Azamgarh	26.77	.570	327.62	134.769
8. Gonda	33.81	.070	228.47	78.416
9. Sultanpur	35.91	.190	322.32	129.040
10. Deoria	37.48	.360	314.87	112.583
11. Faizabad	42.61	.355	300.17	111.474
12. Gorakhpur	61.90	.320	300.86	100.893

Appendix VI.1 Contd.

0	1	2	3	4
13. Allahabad	106.13	.360	435.58	119.355
14. Varanasi	133.84	.575	360.96	136.387
15. Mirzapur	228.85	.400	577.05	58.020
Hill				
1. Pithoragarh	11.47	.690	542.94	58.275
2. Pauri Garhwal	12.50	.750	423.67	95.127
3. Almora	24.87	.705	402.51	139.881
4. Dehra Dun	114.54	1.000	417.58	130.554
5. Naini Tal	164.96	.560	904.49	115.884
Bundelkhand				
1. Lalitpur	9.41	.165	372.66	65.601
2. Hamirpur	10.18	.280	521.78	63.888
3. Banda	11.93	.335	464.99	73.872
4. Jalaun	11.93	.490	369.98	81.894
5. Jhansi	74.01	.505	535.27	84.003

Note : The districts of Tehri Garhwal, Cahamoli and Uttar Kashi could not be included to to non-availability of data.

Source : ASI Report of 1986-87; District-wise Indicators of Development 1989, The Area Planning Division, State Planning Institute, U.P., June 1990. District Domestic Product Estimates, Bulletin No.284, Economics and Statistics Division, State Planning Institute, U.P. and Child Mortality Estimates of India, Occassional Paper No.5 of 1988, Demography Division, Office of the Registrar General, India, Ministry of Home Affairs, New Delhi.

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